

ISSN 2334-7171

ISSN 2334-7058 (Online)
DOI 10.12709/issn.2334-7058

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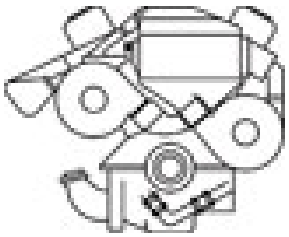
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MEST Journal

Edited by
Zoran Čekerevac

MESTE Vol. 2 No. 2 July 2014



ISSN 2334-7171
ISSN 2334-7058 (Online)
DOI 10.12709/issn.2334-7058
This issue:
DOI 10.12709/mest.02.02.02.00

MEST Journal

Management
Education
Science & Society
Technologies

Edited by
Zoran Čekerevac

MEST Journal **Vol. 2 No. 2 July 2014**

CIP – Каталогизација у публикацији
Народна библиотека Србије, Београд

005+37+3+66

MEST Journal : Management, Education, Science & Society, Technologies / editor-in-chief Zoran P. Čekerevac. – [Štampano izd.]. – Vol. 2, no. 2 (2014) – – Belgrade : MESTE NGO : Faculty of Business and Industrial Management of the "Union" University Belgrade ; Toronto : SZ & Associates, 2013- (Belgrade : ICIM+). – 30 cm

Polugodišnje. - Drugo izdanje na drugom medijumu: MEST Journal (Online) = ISSN 2334-7058
ISSN 2334-7171 = MEST Journal (Štampano Izd.)

COBISS.SR- ID 196182028

MEST Journal

DOI 10.12709/issn.2334-7058



MEST Journal is an international academic journal, official journal of the non-profit organization MESTE, published online, as well as print (subscription), which publishes scientific and professional research articles and reviews in English and/or Serbian, or similar language. MEST Journal is published from Belgrade - Serbia and Toronto - Canada. The focal point of the journal is at international level, with the view on matters from a global perspective, but, also, some papers concerning some local specific events could be published. The science and technological advancements and their socio-political impact that happens all over the world can find place in the MEST Journal.

Publishers

- **MESTE NGO** – Belgrade
- **Faculty of Business and Industrial Management** of the "Union" University Belgrade, Belgrade, Serbia
- **SZ & Associates**, Toronto, Canada

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All published papers have been internationally reviewed.
Two issues of journal are published annually.

ISSN 2334-7058 (Online)
ISSN 2334-7171

Printed by **ICIM+**, Belgrade-Mladenovac, Serbia

www.mest.meste.org
Address:
MESTE MEST Journal
Faculty of Business and Industrial Management – "Union" University Belgrade
Venizelosova 31, 11000 Belgrade, Serbia

Belgrade, July 15th, 2014

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The MEST Journal is registered in DOI system by CrossRef with ***DOI 10.12709/issn.2334-7058***. All articles published in this issue, as well as in the two previous issues of the MEST Journal, have their own DOIs. The MEST Journal journal is registered in **doiSerbia** of the **National Library of Serbia**, and **EleCas** base of **KoBSON**.

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The focal point of the journal remained at international level, with the view on matters from a global perspective. Also, some papers concerning some local specific events are published in this issue. We follow the mission and vision of the journal and help authors to publish their works and present their achievements in the most convenient way. With its broad scope MEST Journal academic journal welcomes high quality, original research articles and reviews from scientists and professionals, professors and PhD students in the areas cowered by its thematic, as it is shown in ***Thematic areas***, but these are not exclusive themed areas.

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MEST Journal
DOI 10.12709/mest.02.02.02.01

MANAGING ENTREPRENEURSHIP EDUCATION IN HIGHER EDUCATION INSTITUTIONS - CASE ROMANIA

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JEL category: **A23, I23, L26**

Abstract

Higher education institutions are facing growing challenges and therefore they must be pro-active in educating students and providing graduates able to develop and combine theoretical knowledge with skills and abilities required in the labor market. After analyzing students' motivations and expectations regarding the "added value" of the master studies in Business Administration, we found a solid confidence in the value and utility of master studies for their future careers. Moreover, entrepreneurship is a valuable alternative, even than lots of the expressed intentions are more declarative. The students' self-assessment regarding the knowledge and skills useful for a possible entrepreneurial career revealed some remarkable features. However, most of the students we had investigated are rather related to the traditional "by necessity" entrepreneurship. There is a relatively small share of traits able to stimulate innovative "by opportunity" entrepreneurship, as we could expect from young, well-educated and open-minded persons. Higher education institutions bear a large part of the responsibility of a correct orientation of students' potential towards an inspiring and prosperous entrepreneurship. Higher education institutions should constantly adapt the academic curricula to the requirements and challenges of the contemporary economy.

Keywords: *entrepreneurial orientation, master students, entrepreneurial education, universities*

1 INTRODUCTION

Besides the opportunities offered by the labor market (i.e. the employment *per se*), entrepreneurship enjoys an increasingly attention from young students. Therefore, understanding the entrepreneurial trends and attitudes among undergraduate and master students (particularly in Business Administration) could provide deeper and clear insights on the relation between university education and the entrepreneurship requirements in the economic framework.

The subsequent implications are obvious: making adequate public policies to promote entrepreneurship among young people and adapting academic curricula, as to meet the students and employers' expectations, but also in response to the challenges of self-employment

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carrier. An adequate education may foster entrepreneurial intentions of an individual, as Turker & Selcuk (2009, p. 144) have revealed: "Since the education offered by a university mostly influences the career selection of students, universities can be seen as potential sources of future entrepreneurs".

Our paper derives from a survey-based research conducted within master students in Business Administration from a Romanian public university. It aims at adding up to the already existing studies regarding the students' ability to capitalize master studies by entering into entrepreneurship. This paper attempts to clarify the following dilemma: to what extent the accumulation of knowledge and skills of high value leads young graduates to self-employment?

Of course, a complete response could be given if we also know to what extent the university curricula are actually prepared for the "entrepreneurial option". In fact, the key question is whether young master students and graduates, and respectively, the "policy makers" are still excessively centered on obtaining / providing a Master's degree diploma, or the focus begins to move towards the intrinsic value of a well-trained graduate, holder of a single set of high-level knowledge, and able to use them in the entrepreneurial activity.

2 BRIEF LITERATURE REVIEW

Literature on entrepreneurship education is rich and diverse, addressing the nature, motivations and predictors, entrepreneurial traits, influence of the economic environment, policies to foster and enhance its effectiveness etc. Entrepreneurial behavior was attributed to the individual's personality traits (Baum, Frese, Baron, & Katz, 2007) or to contextual factors, and it was recently integrated into models of entrepreneurial intentions.

Comparing entrepreneurial spirit of students in Hong Kong and Singapore universities, Ang and Hong (2000) have focused on the importance of personality characteristics. Henderson and Robertson (2000) explained entrepreneurial interest of students through their personal traits and background and the existence of external favorable factors.

Since intentions are the best predictor for actual behavior (Ajzen & Fishbein, 1977), the research of Krueger et al. (2000) on the antecedents of entrepreneurial intentions among students has underlined the importance of disposition to self-employment of young researchers. This willingness, properly guided, can help to a rapid and successful exploitation of the research results.

Lüthje & Franke (2003) showed that all contextual factors perceived as barriers should be identified and diminished. Concurrently, higher education institutions should encourage the supporting elements by moving towards entrepreneurship. The symbiosis between the correct understanding of entrepreneurship and inspired educators will lead to higher levels of entrepreneurial intentions among students (Souitaris, Zerbinati, & Al-Laham, 2007).

Veciana et al (2005), when analyzing the perception of students from Catalonia (Spain) and Puerto Rico (U.S.) on the entrepreneurs within society, found a positive perception on new venture desirability, but a significant circumspection on its feasibility. The authors have confirmed the presence of a strong correlation between the existence of an entrepreneur in the family and the intention to create a new venture.

Kuckertz & Wagner (2010, p. 524), based on data collected from students and graduates in science, engineering and business programs from three European universities, found that students with a stronger orientation towards sustainable business are more likely to move towards entrepreneurship, but also business experience diminishes the positive relationship between orientation toward sustainable business and entrepreneurial intentions.

According to Mora & Vila (2009), about 7-8% of the graduates from European universities choose to develop their own business immediately after graduation, and this percentage seems to be higher than the proportion of first degree graduates who work as self-employers. For Romania, the share of individuals having at least post graduate degree and involved in TEA (Total Early-Stage Entrepreneurial Activity) reported a strong growth, i.e. it increased from 11.25% (2007) to 22.75% (2011). At the same time, the share of the entrepreneurs considered as EB (Established

Business Owners) having at least a post graduate degree increased from 6.64% (2007) to 13.22% (2011) (Petru, et al., 2011), testifying the fast growing entrepreneurial activity during last years (Badulescu & Vancea, 2013).

3 RESEARCH DESIGN

Considering to investigate relevant issues on the subject of entrepreneurial attitudes, orientation and potential of graduate students, we have conducted an extended survey in February 2013 and developed a survey-based study. In the present paper we focus on students' opinion on the relevance of master studies in Business Administration regarding facilitating employability or future carrier expectations. Also, we have analyzed the entrepreneurial antecedents related to intentions and expectations, motivational factors for starting a business and, finally, the key skills and competencies to justify and substantiate (in students' opinion) the entrepreneurial option.

The questionnaire was administered to 123 master students in Business Administration (1st and 2nd year) from the public university in Oradea, Romania, representing all the students enrolled in this program.

As descriptions of the respondents, 33% of them were full-time master students (without any job commitments), 3% work in the public sector, 54% work in the private sector and 10% were self-employed. By gender, 71% of the respondents were female and 29% male; by residence, 66% of them live in cities, 10% in small towns and the 24% in rural areas.

4 RESULTS AND DISCUSSION

After graduation, half of the responding master students (i.e. 50%) declare they intend to launch or to continue their entrepreneurial way, followed by those who wish/want/expect a job in the private sector as an employee (i.e. 28%). A significant proportion (i.e. 13%) wish to work in public sector and 7% consider other options (unspecified, but we assume certain indecision, lack of alternatives or less "standardized" options, such as temporary emigration etc.). The continuing education in the form of doctoral studies counts only few options (i.e. 2%) (Badulescu & Vancea, 2013).

What is the added value of the Master program in Business Administration they are enrolled in and how much they valorize such a program? Figure 1 (see below) reveals that the expectations of young people enrolled in these programs specifically refer to improving their employment opportunities and getting a better salary in the private sector (i.e. 83% of the respondents "partially agree" or "strongly agree" with this assessment) or in the public sector (i.e. 77% "partially agree" or "strongly agree" responses). The role of master programs in business to fostering a profitable entrepreneurial business is appreciated by 80% of the respondents.

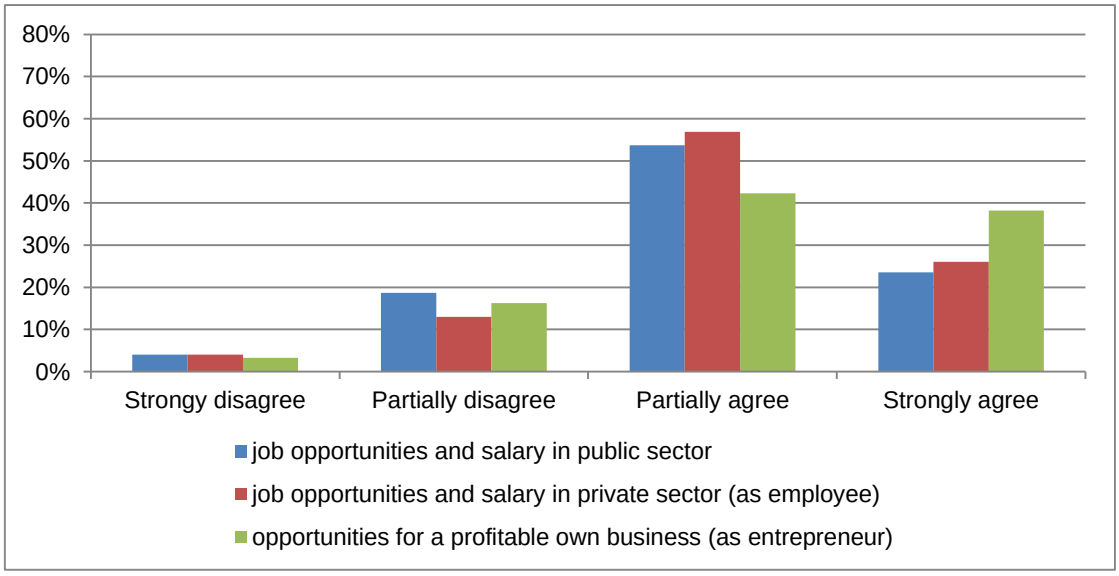


Figure 1. Responses to the question: "The master degree in Business Administration improves my …"

(Source: authors' calculations based on dataset)

Some negative assessments, such as: "Master in Business Administration does not improve my (job) opportunities (and salary) in ...." appear to be lower in the case of entrepreneurial option, but the figures and differences between public employee - private sector - self-employed people don't justify relevant interpretations in this matter.

As previously mentioned, a master program in business helps to exploiting opportunities in future career and gaining higher revenues. We will next investigate the areas where the master program and degree manifests its utility in students' opinion. The expectations for promoting career prospects count 93 options and the prospects for an independent and challenging career count 66 options out of the 123 respondents. Higher revenues expectations register 55 options, job security 44 options and the possibility to get an influence in society and politics gathers 13 favorable responses. However, 44 of the master students' options are prone to doubt of the benefit they will have from these courses. This relatively high number of skeptical options raises serious questions about the motivation in master courses attendance and, from the HEI part, the imperious need to improve the curricula for a higher satisfaction and more positive expectations. Moreover, we express some circumspection regarding the truthfulness and conformism of some respondents tempted by positive responses to this question. (Note: respondents could choose more than one response option).

The following issues refer to the transition from entrepreneurship as a possible option carrier, to entrepreneurship as an actual life alternative, and to give a measure how previous entrepreneurial experience shape the entrepreneurial intentions. In other words, it comes to reveal experiences versus entrepreneurial intentions among business master students. Thus, over 91% of the respondents (i.e. 112 students) said they would be interested to enter into entrepreneurship and launch their own business. The large number of entrepreneurial intentions seems to be a perfect start, but it should not be generalized. In this stage, there are only intentions expressed in a "friendly" framework, i.e. a survey conducted among students in "business", favorable to statements and "virtual raids" into entrepreneurship, but less of specific approaches. This need to adjust the declarative options with the reality is underlined by the responses to the question regarding if people self-declared as interested in entrepreneurship have ever started a business, no matter this business is presently lasting or no. Thus, only 23 people (i.e. 19%) declared they have ever started a business, but the large majority (100 persons, representing 81% of total respondents) admitted they have never started a business. The fact becomes even clearer when investigating how many of these businesses still work. The reason of this question is not just to identify a "critical mass" of businesses which really count, but also because entrepreneurship is a lifetime experience, an ability to survive and even prosper for the individuals and for the involved "stakeholders" (family, employees, customers, suppliers). Thus, more than half of those who mentioned the existence of a previous entrepreneurial business (i.e. 13 people out of 23) stated that this venture has stopped working.

As a brief summary, in quantitative terms, out of 123 master students, 112 are interested in entrepreneurship, 23 previously got entrepreneurial experience, but only 13 of them could be considered active entrepreneurs at the moment. In other words, 100 people (out of 123) studying business administration have never had to deal with an entrepreneurial experience / business, although most of them declared themselves as interested in entrepreneurship.

However, we should not be too disappointed or discouraged by the large gap between intentions and actual actions, as the large majority of respondents are young people under 25, belonging to the first age group entering the labor market. Moreover, as Shane (2009) revealed, a too early entry into entrepreneurship could prove to be an error, a major source of failures, discouragements and waste of human and financial capital for individual, family and society. Based only on naive enthusiasm, broad encouragement and simplified, idyllic visions on the entrepreneurial life, without a minimum experience and theoretical knowledge, the success will not occur soon.

The purpose of all these selected questions was to reveal not only the incidence of entrepreneurship among master students but also how they do understand the challenges of

entrepreneurial careers and if and how they are actually prepared for this spectacular but risky world.

The next question refers to actual or potential motivations to entry into entrepreneurship. Table no. 1 (see below) captures these alternatives and their importance in shaping entrepreneurial intention. The highest scores (the most obvious adhesions) are related to the following motivations for entering into entrepreneurship: the expectation for higher earnings as motivator (i.e. 63 respondents, representing 51%), the desire “to be your own boss” (i.e. 74 respondents, representing 60%) and the desire "to do what I like" (i.e. 77 respondents, representing 63%).

If we add up the scores assigned to the options "very important" and "important", the results are overwhelming, with 92%, 83% and 90% of the responses for each alternative mentioned before. By contrast, the strong disagreement (i.e. 93%) for reasons such as "children are big enough" is explained by the very young age of the respondents. In the same reluctant register there are factors such as family entrepreneurial traditions (i.e. 63%) or "the only way to exercise my profession" (i.e. 54%).

Regarding the meaning of the distribution of responses on different alternatives and motivational assessments, some explanations are needed:

- On the one hand, it is expected that young students, at the beginning of their career, will choose entrepreneurship hoping it will bring consistent income, and it will quickly and directly (!) propel them in management position; they will do what they want (?) or they will be able to combine business demands with family duties. In realistic terms, beyond a disarming sincerity, choosing these options looks a lot of conformism, clichés and a large amount of future disappointments. In fact, consistent gains are not immediately achieved and the rate of business failures is devastating, especially among companies founded by inexperienced young people. The "boss" of small entrepreneurial firms is actually the “factotum“ in the firm, from supply and distribution to labor relations and negotiations; and "doing what do you want" is far from the daily requirements of company’s management. However, there are all powerful motivational drivers, throughout the world, even their emotional expression should be adjusted to the realities of the business world;
- On the other hand, we deal with a second category of reasons, less visible, with no particular credit among master students, although we suppose their strong influence is manifested in more subtle ways. It is about the existence of business models and entrepreneurial tradition within the family, the willingness to implement their own idea for a product or service or to meet the challenges etc. Many of the reasons are completely depending on business experience, practical skills, success and even frustration.
- Finally, there are motivational and contextual factors about which young respondents have no experience or they were accidentally involved, through family, friends, school etc.: “to avoid unemployment”, “the desire to live the current job”, “children are big enough”, or “the only way to exercise my profession”. For these response options, rating them in a neutral position could be the best expression of cautious assessment on their impact on entrepreneurial option.

We could state that the distribution of responses and the group’s specificities (i.e. young people with no significant job and life experience) makes difficult to find out the nature of the intended entrepreneurship, i.e. opportunity versus necessity entrepreneurship.

Even if young people are aware that they lack significant professional and life experience to objectively address the entrepreneurial challenges, this fact doesn’t mean they are not aware of the importance of personal skills and competencies, inherited or acquired, in the managerial or entrepreneurial activity.

The following figure (Figure no. 2) lays-out a series of attributes and personal traits which are specific for entrepreneurial position, used to ask students' own assessment on them. As all these traits, in specific combinations, represent effective abilities and skills useful regardless the chosen career, we asked the respondents to choose only three of them, which they consider to be representative for their personal profile (thus, the total percentages exceed 100%).

Table 1. Factors which motivate starting a business

	Unimportant	Of little importance	Important	Very important
Prospects for higher earnings	3	7	50	63
Willingness to meet the challenges	6	33	57	27
Desire to be your own boss	6	15	28	74
Reconciling business demands with family duties	9	20	47	47
To avoid unemployment	24	35	29	35
Desire to do what I like	8	4	34	77
Desire to leave the current job	49	42	21	11
Children are big enough	93	19	9	2
It is the only way to exercise my profession	54	45	18	6
Entrepreneurial tradition in my family	63	36	13	11
I want to implement my own ideas of product or service	17	29	46	31

Source: authors' calculations based on dataset

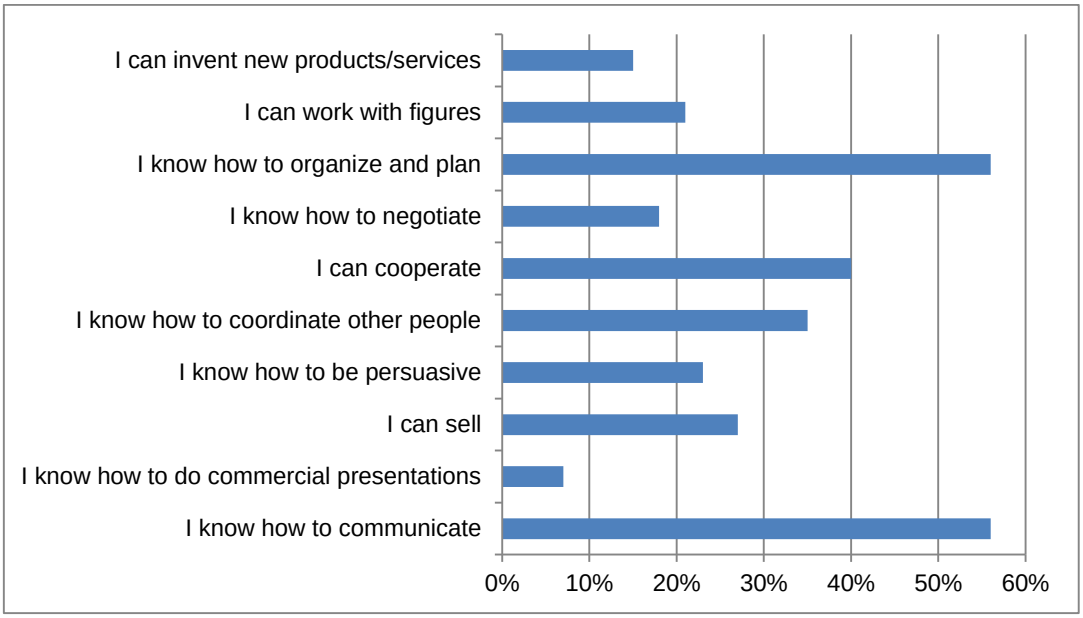


Figure 2 Which are, in your opinion, your three main skills/abilities?

(Source: authors' calculations based on dataset)

At first glance and as expected, students have a good opinion on their own abilities, and most of these meet the common requirements of entrepreneurship. Master students believe they know how to organize and plan (69 responses, i.e. 56%), to communicate (69 responses, i.e. 56%), to cooperate (49 responses, i.e. 40%). By contrast, the ability to do commercial presentation (7% of responses) or to negotiate (18%) are not as familiar for them.

We notice a solid optimism among master students on the skills they possess. A dose of enthusiasm and optimism above average is common and even desirable among entrepreneurs, as revealed by Cooper, Woo, & Dunkelberg (1988) or Huang (2005). However, exaggeration, risks' assuming at any costs, building a false image of himself/herself could become serious threats in entrepreneurial decision.

The sense of this question doesn't lies in the correlation between self-assessed traits and their actual existence in the personality of individuals, in other words if the person really knows how to organize, plan and communicate etc. It refers to and integrates the most important features of entrepreneurial personality, as it is seen by the students, based on presumption that many of these young people are, or will be, entrepreneurs.

It is worthy to find out the main features that they hope to use in the future profession, career and life. The "ideal entrepreneur" in the vision of interviewed master students seems to be a person with considerable planning and organizational skills, good communicator, team player (cooperative) and a good seller.

Even if the perspective is consonant to the reality, as the large majority of entrepreneurs with consolidated, profitable business have a combination of these traits, students projected a necessity and survival-driven entrepreneurship, focused on circumstantial results. Perhaps, this is due to difficult economic circumstances, market fragmentation and a lack of business models. For example, it is an unpleasant surprise for a highly educated person that some abilities registered modest scores, e.g. the "innovative capacity" with 18 responses (i.e. 15%) and "the ability to promote ideas" or "negotiating" with 7% respectively 18%. Opportunity-driven entrepreneurship is a far away eventuality in the students' plans. However, the overall picture is satisfactory, in line with the realities, and the main action recommended for all responsible and involve actors (i.e. HEI and students themselves) is to bring as much the self-assessed capabilities to current realities.

5 CONCLUSIONS

HEI and students are in the core of theoretical and practical debate on finding the optimal combination of high-value scientific knowledge teaching and the way to transform this knowledge into future viable and profitable ventures. Our research identified a significant interest of master students in Business Administration to acquire the necessary and relevant skills for their future career, whether this will be as employees in public or private sector or as entrepreneurs. However, our research also revealed the presence, for a significant part of the respondents, of a formal and declarative interest for entrepreneurship and a superficial knowledge of the realities and requirements of entrepreneurial careers.

Another concern arising from our research findings is related to the predominance of necessity-driven entrepreneurship, which is less connected to contemporary business dynamism and less able to capitalize the academic knowledge. If we add the over-evaluation of generic, difficult to assess skills, serious doubts occur on the effectiveness of master studies and the real motivations of participation in the programs of Business Administration.

The limited nature of our study did not allow us to capturing other determinants and features of the entrepreneurial approach, the extent to which HEI are actually prepared for labor market requirements, as to offer entrepreneurial education at high standards. However, an accurate and realistic attitude of master students towards entrepreneurship, nurtured by an adequate and up-to-date training and education could significantly enhance the role and impact of HEI on economic and social development.

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Received for publication: 29.01.2014
Revision received: 10.05.2014
Accepted for publication: 23.06.2014

How to cite this article?

Style – **APA** *Sixth Edition:*

Badulescu, D., & Badulescu, A. (2014, 07 15). Managing entrepreneurship education in higher education institutions – case Romania. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 1-9. doi:10.12709/mest.02.02.02.01

Style – **Chicago** *Fifteenth Edition:*

Badulescu, Daniel, and Alina Badulescu. 2014. "Managing entrepreneurship education in higher education institutions – case Romania." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 1-9. doi:10.12709/mest.02.02.02.01.

Style – **GOST** *Name Sort:*

Badulescu Daniel and Badulescu Alina Managing entrepreneurship education in higher education institutions – case Romania [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 1-9.

Style – **Harvard** *Anglia:*

Badulescu, D. & Badulescu, A., 2014. Managing entrepreneurship education in higher education institutions – case Romania. *MEST Journal,* 15 07, 2(2), pp. 1-90.

Style – **ISO 690** *Numerical Reference:*

Managing entrepreneurship education in higher education institutions – case Romania. **Badulescu, Daniel and Badulescu, Alina.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 1-9.

MEST Journal
DOI 10.12709/mest.02.02.02.02

IS ECON 101 KILLING AMERICA? A CRITIQUE OF ATKINSON AND LIND, AND BOETTKE

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Abstract

Atkinson and Lind (2013) fire a shot at the good ship economics; actually ten shots. They claim that courses in introductory economics ("econ 101") pass off "ten myths" on unwary students, and public policy practitioners. And what are these "ten myths" we are warned about. They are as follows: Myth 1: Economics is a science. Myth 2: The goal of economic policy is maximizing efficiency. Myth 3: The economy is a market. Myth 4: Prices reflect value. Myth 5: All profitable activities are good for the economy. Myth 6: Monopolies and oligopolies are always bad because they distort prices. Myth 7: Low wages are good for the economy. Myth 8: "Industrial policy" is bad. Myth 9: The best tax code is one that doesn't pick winners. Myth 10: Trade is always win-win. Atkinson and Lind (2013) liken modern economics to the church of the middle ages, in terms of misleading the public. Boettke (2013) is an attempt to refute Atkinson and Lind (2013) which misconstrues Austrian economics in several important ways. The present paper is a rejoinder to both of these publications.

Keywords: *Economics, teaching, myths, praxeology, Austrian economics, science, profits, equilibrium, ceteris paribus, normative and positive economics*

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JEL Category: **A, A1**

I. INTRODUCTION

Atkinson and Lind (2013) offer a frontal attack on economics as it is taught in the modern era, at least at the introductory level. It would appear that dismal scientists "have been anything but shy about asserting their authority," and have unjustifiably seized "a virtual monopoly on economic policy advice." Economists have long been misleading the public, and it is time, it is past time, they were taken down a peg or two, and these authors are just the men to undertake this task.*

Atkinson and Lind (2013) liken contemporary economists to Middle Age Churchmen with a bad case of hubris. They state in this regard "… unlike some disciplines, which acknowledge that there's

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* All quotations from these authors are mentioned in this one article of theirs.

a huge gap between the scholarly knowledge and policy advice, economists have been anything but shy about asserting their authority."

These authors offer "ten myths" that economists have foisted upon their students, the general public and policy makers. In section II we consider and reject all of their critiques on these grounds. Boettke (2013) is a rejoinder to Atkinson and Lind (2013). In it this author attempts to defend the dismal science against these fallacious attacks. In doing so, he engages in an important fallacy of his own. Section III is devoted to a critical analysis of Boettke (2013). We conclude in section IV.

Before we begin our examination of the case against economics by these authors, let us consider a few words of background. Atkinson and Lind (2013)[1] launch their attack on neo-classical economics. I write from an Austrian perspective, not the mainstream one rejected by AL. Boettke (2013) has some Austrian roots, but misconstrues his own supposed principles.

What is the main difference between the two schools of economic thought? Very briefly, conventional economics sees this discipline along the lines of an empirical science. Hypotheses are proposed, statistical tests are devised. If successful, the hypothesis is tentatively accepted, barring any further disproof. There is no such thing as any scientific law, whether in economics or physics. There are only hypotheses that have withstood many examinations. For orthodox economics, prediction is the be all and end all of economics. If your model of the world can predict better than others can, then it is better than these others; if not, not (Friedman, 1953).

For Austrians in sharp contrast, there are indeed economic laws. These cannot be "tested," only illustrated. If econometric findings appear to be incompatible with an economic law, there is something wrong with the former, not the latter.

Here are some examples offered by Hoppe (1995):

> "Whenever two people A and B engage in a voluntary exchange, they must both expect to profit from it. And they must have reverse preference orders for the goods and services exchanged so that A values what he receives from B more highly than what he gives to him, and B must evaluate the same things the other way around.
>
> Or consider this: Whenever an exchange is not voluntary but coerced, one party profits at the expense of the other.
>
> Or the law of marginal utility: Whenever the supply of a good increases by one additional unit, provided each unit is regarded as of equal serviceability by a person, the value attached to this unit must decrease. For this additional unit can only be employed as a means for the attainment of a goal that is considered less valuable than the least valued goal satisfied by a unit of such good if the supply were one unit shorter.
>
> Or take the Ricardian law of association: Of two producers, if A is more productive in the production of two types of goods than is B, they can still engage in a mutually beneficial division of labor. This is because overall physical productivity is higher if A specializes in producing one good which he can produce most efficiently, rather than both A and B producing both goods separately and autonomously.
>
> Or as another example: Whenever minimum wage laws are enforced that require wages to be higher than existing market wages, involuntary unemployment will result.
>
> Or as a final example: Whenever the quantity of money is increased while the demand for money to be held as cash reserve on hand is unchanged, the purchasing power of money will fall."

Here are some more examples: There is a tendency for profits in all industries to equalize, assuming away differential risk. There is a tendency for the price of each item to be the same. Profits equal zero in equilibrium (Block, 1973, 1980, 1999; Batemarco, 1985; Fox, 1992; Hoppe, 1989, 1991, 1992, 1995, 2006; Hulsmann, 1999; Mises, 1969, 1998; Polleit, 2008, 2011; Rizzo, 1979; Rothbard, 1951, 1957, 1960, 1971, 1973,

[1] Hence, A&L.

1976, 1997a, 1997b, 1997c, 1997d, 1993; Selgin, 1988).

These are all synthetic apriori statements: necessarily true, but not mere tautologies that indicate, merely, how we use words. These statements give us valuable knowledge of how the economy actually works, and they cannot rationally be denied.

As for prediction, in the Austrian or praxeological approach, there is no such thing. Economic law only applies ceteris paribus, and ceteris is never paribus in the real world. Nevertheless, knowledge of economic law does indicate how the economy works. Praxeologists can of course predict the future of the economy, but not qua Austrians, only as historians, or journalists.

With this introduction, we are now ready to consider the case made by A&L to the effect that "Econ 101… leads policymakers astray." Let us now consider their "reasoning."

II. ATKINSON AND LIND

Myth 1: Economics is a science.

"The way economists maintain stature in public policy circles is to present their discipline as a science, akin to physics." This is indeed true, but only for the mainstream, not Austrian economics. However, praxeologists join their neo-classical brethren in maintaining that economics is indeed a "science," in the sense of an organized, disciplined body of thought, promoting systemized knowledge.

However, A&L are having none of this. According to them: "… if economics is really a science – which implies only one answer to a particular question — why do 40 percent of surveyed economists agree that raising the minimum wage would make it harder for people to get jobs while 40 percent disagree?"

But this is highly problematic. A&L rely on Ruccio (2013) for this conclusion, but the latter puts the question to his respondents[2] in a particularly pusillanimous manner. He asks of them to either strongly or weakly agree, or be unsure, about this claim: "Raising the federal minimum wage to $9 per hour would make it notably harder for low-skilled workers to find employment."

There is no more vociferous critic of the minimum wage than the present author (Block, 2000, 2001; Block and Barnett II, 2002; Block, Dauterive and Levendis. 2007; Greene, Henry, Nathanson and Block, 2007; McCormick and Block, 2000; Schuldt, Woodall and Block, 2012; Sohr and Block, 1997). My numerous critiques are on the ground that this law creates unemployment amongst the unskilled. But even I would have great difficulty in strongly agreeing with this particular statement. I am not at all sure that the unemployment rate would "notably" increase due to a boost in the level at which this law is pegged. This is because I have no strong opinions as to how many workers have discounted marginal revenue products between $9.00 and the present law stipulating $7.25. I have no doubt that in equilibrium *all* of them would be unemployed, of course. A far better question would have been: "Ceteris paribus, will a minimum wage set at any level tend to unemploy workers with productivity of less than that amount." To be sure most economists, Austrian or mainstream, would support such a statement.

And this goes for Joseph Stiglitz himself, Nobel Prize winner and major supporter of this legislation as a means to increase wages for the unskilled. He signs petitions to this effect, but his textbook (Vuk, 2006) contains the consensus view on this despicable legislation within the profession. That is, of course, minimum wage laws create unemployment for workers with lower productivity than that stipulated by law. (For more on the strong consensus amongst economists on minimum wage legislation, see Alston, Kearl and Vaughan, 1992; Block and Walker, 1988, Caplan, 2007; Frey, Pommerehne, Schneider and Gilbert, 1984; Fuller and Geide-Stevenson, 2003; Gordon and Dahl, 2013; Wolfers, 2012). In any case, just because there is widespread disagreement this does not mean that a particular discipline is not scientific. Climate science is certainly a science,

[2] Another difficulty is the panel of "experts" of whom they pose this question. For a critique, based on a biased sample, see Caplan, 2012. Paradoxically, this panel usually demonstrates consensus amongst economics, not the lack of same (Wolfers, 2012)

and yet there is much disagreement amongst meteorologists. At times in the past and even upon occasion in the modern era there has been little consensus within the following sciences: genetics, astronomy, physics, chemistry and biology.

Myth 2: The goal of economic policy is maximizing efficiency.

In the view of A&L "Economists have one overarching principle that shapes their advice: maximize 'efficiency.'" But this is an Econ 101 confusion between the normative and the positive. The only economic "principle" that exists is to explain and understand economic reality. Economics is a positive science, not a normative one (Block and Cappelli, 2013). "Economic policy," presumably, refers to the actions of the government. Economics, per se, has no view on that either, as this too is a normative concern. The dismal science is limited to unearthing cause and effect relationships in its area of study. "Should the government institute rent control?" No economist worthy of his salt can answer that. That is a matter of values, not economics. The economist, qua economist, must limit himself to explaining what the effects of such a law would be.

A&L also err in their claim that somehow "inefficiency — in the sense of disruptive innovation" a la Schumpeter is more efficient than market resource allocation. No. Ideally, a properly functioning economy can have both at the same time: an optimal amount of new innovation, coupled with efficient allocation at each point in time. There is no necessary conflict between the two desiderata.

In any case, as members of the public choice school (Buchanan and Tullock, 1962) never tire of reminding us, the goal of economic policy is to feather the nests of politicians, bureaucrats, crony capitalists and others of their ilk, not to "promote efficiency."

Myth 3: The economy is a market.

According to A&L, "In the world of Econ 101, 'the economy' is usually treated as a synonym for 'the market.' But an enormous amount of economic activity takes place outside of competitive markets dominated by for-profit, private firms." This charge is just plain erroneous. I defy these authors to point to any textbook, any textbook at all, that fails to mention "governments … households … charities" as components of the economy. Do not A&L have editors where they publish? There are of course individuals who shave themselves, shower themselves, feed themselves, dress themselves, instead of resorting to the market where they could hire barbers, bathroom attendants, butlers, maids, manservants, etc.

Myth 4: Prices reflect value.

A&L maintain that "If the economy is a market, prices are what allow goods and services to be efficiently allocated. In Econ 101, because prices are set in 'free markets,'[3] the price of something must be a reflection of its real value." Nonsense. Prices are only accurate measures of scarcity value in equilibrium, where there are no profits and losses. In the real world of entrepreneurial error, prices are continually moving in that direction, but only theoretically ever attain it; in plain English, the real world economy is never in full equilibrium. One wonders if A&L ever sat through a real Econ 101 course themselves. Maybe they slept through the introduction to this subject.

On the basis of this misunderstanding of theirs, our authors berate the profession because "virtually no economist … including Ben Bernanke and Alan Greenspan … sounded the alarm … in the run-up to the Great Recession (regarding) real house prices…"

This, it cannot be denied, is a good criticism of mainstream economists, who live and die by predication, and failed dismally on this occasion as A&L perceptively note. But it does not so much as lay a glove on Austrianism, which eschews prediction. However, paradoxically, there were numerous praxeological practitioners who did indeed make this prediction (Block, 2010), albeit not as praxeologists of course, but rather as

[3] Note the very objectionable scare quotes around this phrase.

economic historians, commentators and journalists (e.g., thymologists).

Myth 5: All profitable activities are good for the economy.

A&L sneeringly opine "Another axiom of Econ 101 is the assumption that all profitable activities are good for the economy." This is indeed true, but only with some provisos. No one thing can be good for the entire economy, which consists of billions of people. But every commercial action between the two parties involved is profitable for both of them, at least in the ex ante sense. To make sense of this claim, we must also posit that the exchange took place voluntarily, with no duress involved (Rothbard, 1997E). If "the economy" consists of the concatenation of all such business interactions, then, yes, not only are "all profitable activities … good for the economy," but all purchases, sales, rentals, etc., are, too. Ain't the "magic of the market" great?

A&L dismiss Adam Smith who did not at all "'prove…' that pursuit of self-interest maximizes economic welfare." Rather, he offered the insight of the invisible hand, that when pursuing his own self-interest, the market leads the businessman to enrich others, an astoundingly important vision. For a critique of Smith based on the claim he did not go far enough in his support of free enterprise, see Rothbard, 1987.

A&L are particularly bitter about "pure rents (profiting from real estate appreciation, stock manipulation or the accident of owning mineral deposits that become more valuable) … financial arbitrage, gambling in real estate or exploiting crony-capitalist political connections." But all of these are fully compatible with our understanding that mutually agreed upon trades are beneficial to all parties, given the provisos mentioned above. When real estate appreciates, the person who sells it, not less than the purchaser, gain. Successful arbitrage merely implies bringing goods from areas where it is less valued, and hence lower priced, to places where it is more valued, and hence higher priced. The welfare of all market participants improves when speculators save grain to ward off a famine, even though when they do so, they sell at a high price. A&L do not seem to realize that "crony-capitalist political connections" are not really part of the free enterprise system. Rather, they are the diabolical very opposite of laissez faire capitalism; e.g., fascism.

Were these authors in my own Econ 101 class, I fear they would not earn a very high grade for there are several other errors in this section. A&L think that "Mafia contract killing" can't be profitable, but it most certainly is in the ex-ante sense, at least for the killer and the person who took out the contract, otherwise they would not have done so. However, this certainly does not apply to the victim, but then he was not part of the commercial arrangement. A similar analysis applies to "prostitution and drug use." Both of these are engaged in by consenting adults who expected to gain from the transaction.

Our authors opine: "But the version of Econ 101 familiar to most politicians and pundits ignores the distinction between productive activities (e.g., making useful appliances or lifesaving vaccines) and pure rents (profiting from real estate appreciation, stock manipulation or the accident of owning mineral deposits that become more valuable). If the greatest fortunes are to be made in financial arbitrage, gambling in real estate or exploiting crony-capitalist political connections, the argument that private profit-seeking maximizes economic welfare and the public good is undermined."

There is a bit of a straw man argument here. No one ever said that crime is good for the economy. Even Keynesians (1936) such as Krugman (McKenzie, 2003; Murphy, 2012; Powell, 2001) who misunderstand the broken window fallacy and think that there are economic blessings from destruction do not see criminal activity in the same light. One of the many weaknesses of A&L is that they are strong on accusations, weak on documentation.

Myth 6: Monopolies and oligopolies are always bad because they distort prices.

State our authors: "In the abstract universe of Econ 101, monopolies and oligopolies are always bad because they distort prices… The neoclassical vision of the normal economy with

multiple small yeoman producers resonates with Jeffersonian antitrust policy, with its suspicion that all large enterprises must be conspiracies against the public."

I may have to revise their grade in my course in a sharply upward direction, for A&L do indeed here land a knock-out blow against most members of the economics profession, but not, of course, the Austrians. The mainstream computes four firm concentration ratios, and Herfindahl indices, and on the basis of them condemn large sized firms, even if they attained this status through purely market means; for a critique of this misbegotten analysis, see Anderson, et. al., 2001; Armentano, 1999; Barnett, et. al., 2005, 2007; Block, 1977, 1982, 1994; Block and Barnett, 2009; Boudreaux and DiLorenzo, 1992; Costea, 2003; DiLorenzo, 1996; DiLorenzo and High, 1988; Henderson, 2013; High,1984-1985; McChesney, 1991; McGee, 1958; Rothbard, 2004; Shugart, 1987; Smith, 1983; Tucker, 1998A, 1998B. But our authors lose a few points when they mention "temporary monopolies based on technological innovation." There are no such things. A monopoly is a government grant of privilege; technological innovation renders firms responsible for them, rather, single sellers.

Myth 7: Low wages are good for the economy.

A&L inform us: "According to Econ 101, high wages are bad for an economy and low wages are a blessing. James Dorn of the libertarian Cato Institute declares that higher wages, by causing less demand for workers, mean that 'unemployment will increase … No legislator has ever overturned the law of demand.' High-wage countries, we are told, price themselves out of a supposed global labor market."

But these authors completely misconstrue Dorn (2013). He was discussing not "high wages," but wages *artificially raised* by legislative fiat, such as the minimum wage law. Points off A&L's grade for this egregious misreading of Dorn's very clear text.

There is nothing at all the matter with very high wages, as occur in Silicon Valley, Hollywood or Manhattan. Rather, this is evidence of extremely high productivity. Nor is there anything problematic per se about low wages either. These signal low productivity (the cause of this unhappy state of affairs is almost always unwise government intervention into the economy (Gwartney, et. al, 1996)). The difficulty is with wages that are artificially raised, or lowered for that matter, via minimum or maximum wage laws. Wage rates have a role to play in an economy. Under economic freedom, they always tend to reflect relative scarcity and productivity. It is only when government interferes in the market process that this sort of economic inefficiency raises its ugly head.

Myth 8: "Industrial policy" is bad.

Our authors aver: "Econ 101 tells us that letting markets determine how many 'widgets' to produce maximizes efficiency. The worst thing government can do is engage in 'industrial policy' — a catch-all pejorative used to discredit everything from funding solar energy companies to encouraging more college students to major in science." A&L write as if all introductory textbooks fully support laissez faire capitalism. Nothing could be further from the truth. Perhaps these writers have never read any of Econ 101 texts, at least not very carefully. Very much to the contrary, the mainstream textbook authors see market failures everywhere, all of which are in need of "industrial policy" to correct them. They see externalities, public goods, inequalities of wealth and income, lack of perfect competition, and much more, all requiring government action. Happily, this does not at all apply to Austrian texts (Callahan, 2004; Gordon, 2000; Murphy, 2007, 2010; Skousen, 2008; Taylor, 2011).

A&L note that "banks issued trillions of dollars of bad loans leading to the financial crisis." True enough. But this was the *result* of the very "industrial policy" favored by them, for banking is one of the most highly regulated industries of all.

Our authors continue: "… for many investments private and public rates of return differ, often quite significantly. And unless society (through government) tilts investment to those activities where the public rate of return is higher (e.g., scientific research), growth will be less." Yes, if the bureaucrats could successfully "pick winners" or earn large profits, it is at least conceivable they could short-circuit the very imperfect market (which has profits as well as losses, ex post) and

bring about greater efficiency. One wonders why oh why these authors think this is the case? Certainly, statist investors do not benefit from the weeding out process of the market (Hazlitt, 2008), where success is rewarded, and failure penalized. Anyone remember the failed Solyndra subsidies?

Myth 9: The best tax code is one that doesn't pick winners.

According to A&L, "Econ 101 disparages industrial policy, even, or perhaps especially, when it is used in the tax code." Again, this is a misreading of introductory economics texts. They are replete with schemes for carbon taxation, taxes to promote egalitarianism, education, etc. Indeed, virtually every economics 101 text book urges, supports, defends, demands such industrial policy on grounds of combatting the so-called "market failure" of externalities. For example, introductory textbooks argue in favor of taxes on products that create so-called external diseconomies of pollution, and in favor of subsidies on industries that presumably foster positive externalities such as education. If that is not picking winners (and losers) then nothing is.

Myth 10: Trade is always win-win.

Our economic illiterates characterize "comparative advantage" as a "fairy tale." Why? Because "nations like America, Britain, Germany and Japan have used national industrial policies over the past century to become industrial powerhouses." Not so, not so. Yes, these countries engaged in tariff protectionism, but grew *despite* these malicious practices, not because of them.

No textbook ever claimed that "the location of factories and innovative research complexes is (always) determined by comparative advantage. Increasingly it is the artificial outcome of negotiations among multinational corporations and territorial states." Yes, yes. But to call our real world mercantilist system "free trade" bespeaks economic illiteracy to an astounding degree.

III. BOETTKE

Boettke (2013) makes several telling criticisms of A&L, but as we have already discussed the many and serious errors of the latter, I move to do so for the former. There are fewer fallacies here, but they are as grave if not more so. The main difficulty is that Boettke (continually) analogizes economics to physics:[4] "One must always remember that simple economics -- basic principles derived from the logic of action in a world of scarcity -- is *not* simple-minded. Critics of economics have forever tried to paint Econ 101 into such a corner --- unrealistic and unhelpful for the real world. How would we react if someone actually said something similar about physics?"

While this would not at all present any issue for the orthodox economist, who labors under a severe case of "physics envy," (Barnett, 2008, p. 140, fn. 20; Clark and Primo, 2012; Mises, 1978, 1998; Prowse, 1996; Rothbard, 1960, 1992, 1997A, 1997B; Taleb, 2010, p. 184; Terrell, 2010) it is a devastating concession for any Austrian economist to make, such as Boettke. It is not as if what this scholar is getting at here is not understandable: he is making the case that just as those who violate the findings of physics come to no good ends, the exact same thing applies to economics: "But make no mistake about it, the denial has the same impact on the "laws" of economics as the denial of the 'laws' of physics would by a man about to jump off the top of building would on the inevitable impact. All his denials will not mean much when he hits the pavement."

But it makes no sense to give the entire store away even in a worthwhile attempt to undermine A&L. Methodological dualism is one of the very basic building blocks of the entire praxeological edifice. There are gigantic and stupendous differences, at least for Austrians, between the laws of economics and the "laws" of physics. Indeed, there is no such thing as the latter. To deny a synthetic apriori statement in economics is to commit a veritable

[4] Boettke does make the following statement: "Economics has the same ontological status as physics --- reality is not optional --- but the 'laws' of economics are derived following different epistemological procedures. This is really nothing more, or less, than what Aristotle taught about methods of analysis being chosen based on appropriate." This cannot be denied. But it does not at all obviate the claim made in the text.

logical contradiction. The same does not at all apply to physics. The so called "law" of gravity is merely a hypothesis. Yes, a lot rests on it; it is certainly a highly accepted hypothesis. But as scientists we must hold ourselves open to the possibility of it one day being contradicted. If so, there will be no violation of the laws of logic. However, it is logically impossible for the same thing to occur in the realm of economics, any more than within geometry, or other areas of mathematics or symbolic logic. Austrian methodology is predicated on this vast divergence, and Boettke runs roughshod over it.

States Rothbard, 1985 in this regard:

> "At the heart of Mises and praxeology is the concept with which he appropriately begins *Theory and History*: methodological dualism, the crucial insight that human beings must be considered and analyzed in a way and with a methodology that differs radically from the analysis of stones, planets, atoms, or molecules. Why? Because, quite simply, it is the essence of human beings that they act, that they have goals and purposes, and that they try to achieve those goals. Stones, atoms, planets, have no goals or preferences; hence, they do not *choose* among alternative courses of action. Atoms and planets move, or are moved; they cannot choose, select paths of action, or change their minds. Men and women can and do. Therefore, atoms and stones can be investigated, their courses charted, and their paths plotted and predicted, at least in principle, to the minutest quantitative detail. People cannot; every day, people learn, adopt new values and goals, and change their minds; people cannot be slotted and predicted as can objects without minds or without the capacity to learn and choose."

Thus, Boettke (2013) in his otherwise admirable and accurate rejoinder to A&L, does the Austrian economics movement no little harm by conflating such an important distinction with his particularly inept analogy between economics and physics. Praxeology is in great part built on an utter renunciation of the similarity between the two, and Boettke (2013) needlessly and mistakenly brings them together.

If this author had mentioned "physics" on one occasion, we might be tempted to overlook his mistake as a sort of typographical error. But he mentions it in this short passage no fewer than five times. It is thus difficult to dismiss this as a slip of the tongue, or the fingers on the keyboard.

He continues with his conflation of these two very different universes of discourse:

> "To go back to my physics talk --- if you drop a feather from the top of a building it may very well float up first before coming down to the ground, but nobody would believe that means that the "law of gravity" was being overturned. Same in economics; there are off-setting factors that in the basic logic are assumed to be held aside for the sake of analysis. However, when *applying* the 'laws' of economics to public policy, these off-setting factors must be taken into account [Just as in applying physics, the engineer must take into account factors such as wind resistence (sic) etc.]. In economics, this is where Institutional Analysis comes into play. An appropriate institutional economics does not critique the science of economics, but provides the bridge between the science of economics and the art of political economy."

Boettke quite rightly placed quotation marks around "law of gravity," since there is no such thing. If we adhere strictly to the proviso of the logical positivists (for a critique from an Austrian perspective, see Gordon, 1996, 2011; Long, Undated; Mises, 1978; Richards, 2009; Rothbard, 1992), this "law" is only a hypothesis, albeit a very strongly held one, based on much evidence. When the feather does not immediately drop, we of course surmise an upward wind draft or some such (or a magnet in the feather and some chicanery from an airplane above). A similar occurrence occurs in economics all the time, which is why we employ the ceteris paribus assumption, and jokes about chemists, physicists and economists marooned on islands with cans of food and no can openers. Nonetheless it is imperative, at least for Austrians, to maintain the methodological distinction between the two very different academic disciplines.

It is more than passing curious that Boettke employs the same scare quotes for the "laws" of economics. Does he not accept methodological dualism? Synthetic apriori *laws*? The basic tenets of praxeology? If not, it is hard to understand why he would be counted as an Austrian economist. If yes, it is difficult to comprehend his continual use of the fallacious physics metaphor to expound upon economics.

I said above that Boettke's confusion between the methodology of physics and economics was his major error. What is his minor one? He states:

> "Great teachers of economics, such as Henry Simons and Ludwig von Mises, believed that one of our primary tasks as economists was to dispel the public of popular fallalcies (sic)."

There is no problem, from this quarter, with regard to Mises. I fully support Boettke's contention there. But Simons? I have no idea as to the quality of his lecturing, but I quarrel with this characterization of Boettke's as a "great teacher," since a necessary condition for that would be a sound knowledge of economics. Rothbard (2012) and Block (2002) make the case that Simon misunderstands the important economic concepts of monopoly, anti-trust, competition, price cutting, free association. North (2012) makes similar points regarding money, banking and macroeconomics.

IV. CONCLUSION

A&L (2013) make some very good criticisms indeed against Econ 101 as taught by mainstream neo-classical economists, although most of them miss their mark. They fail dismally with regard to the Austrians. Boettke (2013) succeeds in correcting A&L (2013), but falls victim, himself, to an important fallacy: conflating the proper study of economics and physics.

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Received for publication: 19.05.2014
Revision received: 10.06.2014
Accepted for publication: 23.06.2014

How to cite this article?

Style – **APA** *Sixth Edition:*

Block, W. E. (2014, 07 15). Is econ 101 killing America? A critique of Atkinson and Lind, and Boettke. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 10-22. doi:10.12709/mest.02.02.02.02

Style – **Chicago** *Fifteenth Edition:*

Block, Walter E. 2014. "Is econ 101 killing America? A critique of Atkinson and Lind, and Boettke." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 10-22. doi:10.12709/mest.02.02.02.02.

Style – **GOST** *Name Sort:*

Block Walter E Is econ 101 killing America? A critique of Atkinson and Lind, and Boettke [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 10-22.

Style – **Harvard** *Anglia:*

Block, W. E., 2014. Is econ 101 killing America? A critique of Atkinson and Lind, and Boettke. *MEST Journal,* 15 07, 2(2), pp. 10-22.

Style – **ISO 690** *Numerical Reference:*

Is econ 101 killing America? A critique of Atkinson and Lind, and Boettke. **Block, Walter E.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 10-22.

MEST Journal
DOI 10.12709/mest.02.02.02.03

STATE REGULATION AS A FACTOR OF SUSTAINABLE ECONOMIC DEVELOPMENT

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JEL category: **K2, O1**

Abstract

The special attention of the state should be attached to agricultural sector of economy because it performs important functions such as supply of food security of the country, assistance in employment of rural population, formation of export potential. The necessity of state intervention in the processes of functioning of this branch is predetermined by its features, among them the climatic effects and seasonality of production. That is why the strategic task of agrarian policy of the state is to form the effective competitive agricultural production, which is able to provide the food security of the country and the increase of export of some types of products. Implementation of such tasks is impossible without strengthening of role of the state backing of this important industry.

The importance of state regulation in agriculture are considered, as well as the current conditions of activities of the agricultural enterprises on the basis of the growth of globalization trends are reflected in the article. The main components of state regulation, such as subjects, objects and functions of management at the national, regional and local levels; goals, objectives; methods and instruments of state regulation are determined. The barriers for the development of the agricultural sector in Ukraine are identified, and the necessity of adaptation of agricultural activity to international standards is grounded. The key directions for improvement of regulation mechanism in agricultural sector that will promote to the sustainable economic development of the national economy are offered.

Keywords: *state regulation, innovations, budgetary-tax regulation, financial support, price policy, sustainable development.*

1 INTRODUCTION

At the present stage of development of economic systems the drawbacks of the mechanism of market economy are appeared more often. Among the negative results of the market actions is reduction of the enterprise stability, inflationary fluctuations, imperfection of foreign economic policy, increase of unemployment and staff turnover, etc.

The special attention of the state should be attached to agricultural sector of economy because it performs important functions such as supply of food security of the country, assistance in employment of rural population, formation of export potential. The necessity of state intervention in the processes of functioning of this branch is predetermined by its features, among them the climatic effects and seasonality of production. That is why the strategic task of

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agrarian policy of the state is to form the effective competitive agricultural production, which is able to provide the food security of the country and the increase of export of some types of products. Implementation of such tasks is impossible without strengthening of role of the state backing of this important industry.

2 THE ANALISIS

The mechanism of coordination and optimal correlation of state and market elements is provided in the developed countries of Europe. Its balance depends on the overall economic state in the country, the specific nature of production conditions, the effectiveness of all methods and instruments of impact. The experience of countries, where agrarian industry is considered to be the basis of vital activity of society, certifies the efficiency of mechanism of state regulation. The leaders of agrarian production among the countries of European Union are traditionally considered to be Germany and France, one of the world's leaders is the USA. In the countries of EU the volume of state support of agrarian sector is 35% from the amount of the manufactured products, in Japan and France – 72%, in the USA – 40%, in Ukraine – 8.3%. In European countries the state support of agrarian production is carried out through the provision of law interest credits, maintenance of the fixed prices, implementation of direct cash payments, etc. Herewith, 90 % of prices of agricultural produce as subsidies for support of agrarians through high prices on means of production fall under state regulation (Maliy, 2008, p. 19).

Most foreign countries regulate the prices on agricultural produce, raw materials and food. There is orientation of providing the certain level of profits on accumulation in agriculture. Thus the classic methods are used, in particular, the establishment of controlled prices, the determination of limits for the change of price, the control of price policy of monopolies and large producers, the creation of conditions for their decrease.

The agriculture development in Ukraine is characterized by low level of profitability of production (in 2012 year – 20.5%) in terms of absence of clear mechanism of state regulation of agrarian economic relations. Basic types of stockbreeding are unprofitable, in particular cattle and poultry. Certain difficulties for Ukraine are caused by membership in WTO in view of competitiveness of domestic enterprises.

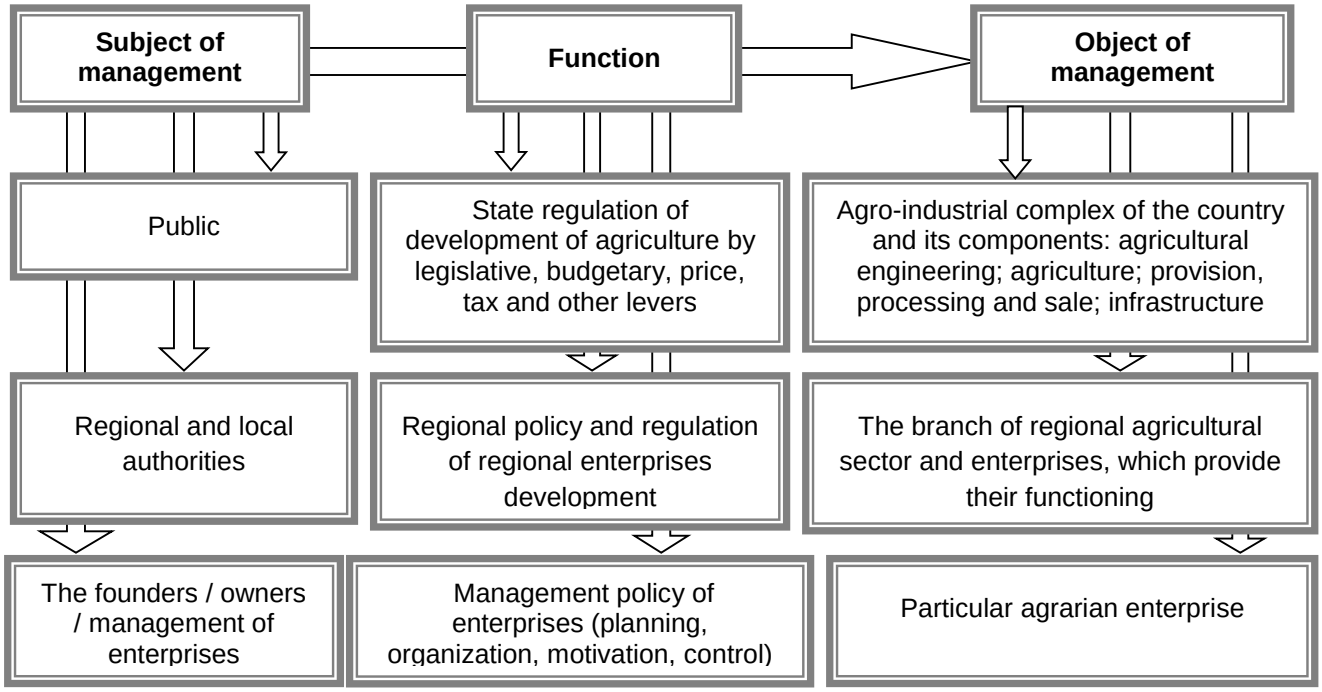


Figure 1. The system of state management in agriculture

With the purpose of minimization of negative factors of globalization and warning of possibility of crisis there is a need to introduce clear approach as to development and realization of state regulation measures. Forming of competitive agrarian production has to take place due to international norms and standards and be based on the rational use of the financial, labor, material, technical and innovative resources.

The main subject of stabilization of agricultural development has to become the state that implements its action on three levels of management (Figure 1).

Due to the specification of subjects and objects of state regulation of the economy as part of state management, it is useful to define its primary purposes and methods that are acceptable to implement in modern economic conditions.

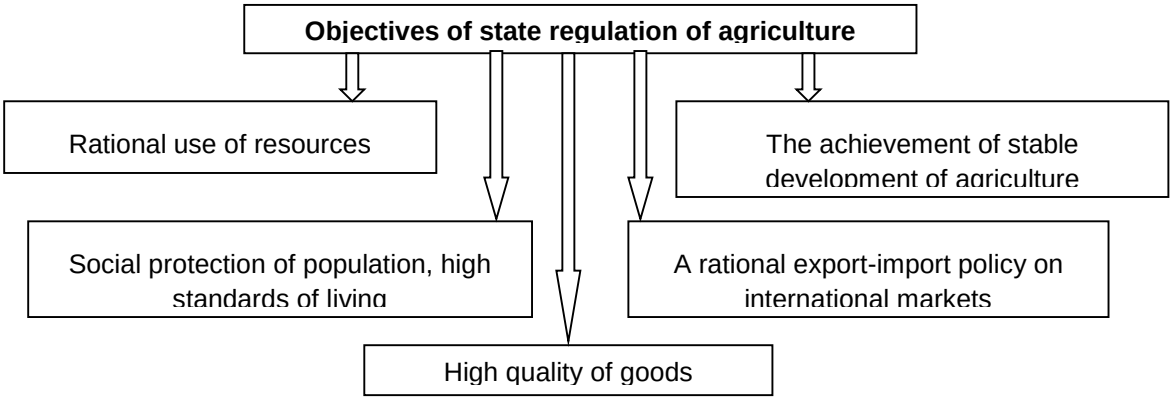


Figure 2. Key objectives of state regulation of agriculture

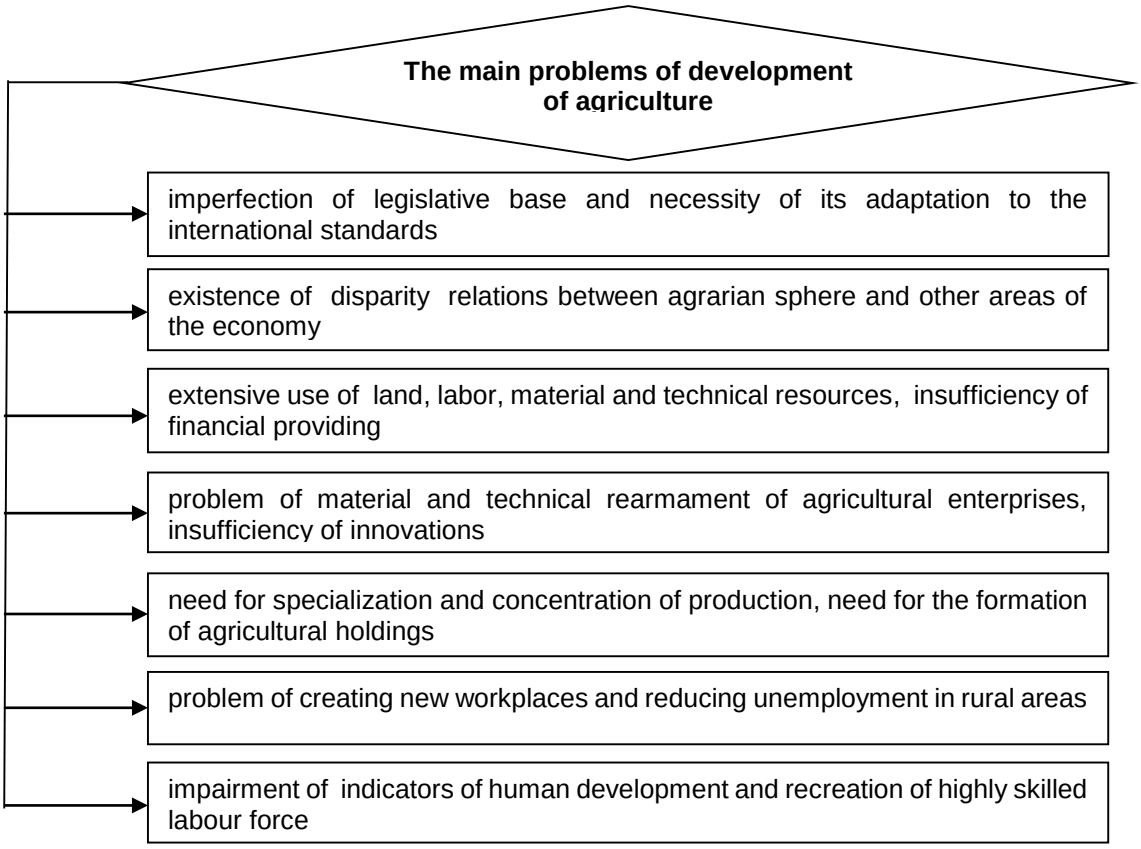


Figure 3. The primary problems of development of agrarian sector of Ukraine

The main purpose of state regulation of agrarian sphere is to provide socio-economic stability in agriculture and food security of population considering world globalization and integration tendencies. The tasks to be performed by the state as subject of management contribute to the ultimate goal (Figure 2).

The current situation which was folded in agriculture of Ukraine has a number of problems that require urgent resolution. We consider that the main obstacles to the effective development of agriculture are as shown on the figure 3.

Among the key purposes of state policy of development of agricultural enterprises it is possible to select two groups: macroeconomic and microeconomic. Macroeconomic purposes include providing of stable rates of development in agricultural, food security of the country, formation of its export potential; reduce the level of labor migration and unemployment in rural areas. In turn microeconomic purposes are determined in the following directions: maintaining of high profitability and competitiveness of agricultural enterprises; prevention of bankruptcy.

The mechanism of state regulation includes such important components as the methods and tools of this process. The methods of state regulation are the ways of state influencing to objects of management through the authorities for the purpose of providing the effective functioning of the economy. Modern scientists-economists define the methods of legislative, financial, price and social regulation that specified through the use of specific tools of influence. In modern conditions the state has a whole complex of effective regulators, among which: taxes, subsidies, investments, credits, interest rates, benefits, financing of the special purpose programs and others.

Thus, legislative regulation of agriculture is the development of laws that provide the functioning of market structures, consumer protection and public interest in agriculture sector of economy.

A positive aspect of state policy is the acceptance of legislative base that should regulate and provide the effective development of the agricultural sector. In this respect it should be highlighted: Law of Ukraine “About State Support of Agriculture in Ukraine” from 24.06.2004, № 1877-IV (current version from 08.11.2013); Law of Ukraine “About the priority of social development of rural areas and agriculture in the national economy” from 17.10.1990, № 400-XII (current version from 10.06.2012); Law of Ukraine “About the Fundamentals of State Agricultural Policy for the period up to 2015 year” from 18.10.2005 № 2982 -IV.

However, the question that needs to be resolved is the actual functioning of key positions of the legislative base taking into account modern tendencies.

Another question is the financial support of agrarian enterprises in the form of budget subsidies. According to the Law of Ukraine “About State Support of Agriculture in Ukraine” budget subsidy given with a purpose the support of level of effective demand of Ukrainian consumers of agricultural products and to prevent the unprofitableness of the Ukrainian producers of such products (Zakon 1877-IV, 2004).

Financing the agricultural sector from the state is carried out on principles of the irreversibility of funds and their purpose direction. The important aspect of the role of state influence in this area is the increase of degree of control over the use of trust funds and compliance of the financial discipline. To ensure the effectiveness of the use of allocated funds it is necessary to regulate not only the amount of financial funds, but also the efficiency and the purpose directions of their use.

Special attention is given to the mechanism of taxation. This system should take into account the peculiarities of agricultural enterprises and the specific conditions of agricultural production (for example, seasonality and action of climatic conditions). Besides, the mechanism of profit taxation of the agrarian enterprises should consider the size of agricultural land, financial indicators, regional and territorial characteristics.

In the conditions of growth of competition, each agricultural enterprises must support its competitiveness through introduction of innovation, renewal of material and technical base. However, the innovative development of agricultural enterprises is reflected not only in the application of the latest innovations in the sphere of machinery, equipment and powerful machines. No less important role played by the use of high-

yielding crop varieties and productive animal breeds, and also innovation in the management area (modern methods of management, planning of basic production processes, labor organization and production, personnel motivation, assessment of results and control of activities). In turn, the state must support the technical and technological re-equipment through joint efforts with the international agricultural corporations in the context of attracting the financial resources and best practices. The orientation of state policy should be aimed at creating large integrated agricultural systems based on innovation. Large agrarian enterprises have the considerable land, material and labor resources. The main question is the rational use of these resources. Possibility of increase of own competitiveness can become reality if will be expansion of production capacities, modernization of equipment, introduction of innovation and involvement of investment. However, it is possible only if a large agricultural enterprises will be created and state support will be held.

Therefore, the formation of favorable innovation trends deserves the special attention in conditions of globalization processes. The main competitive advantage of Ukraine in this area can become a significant natural resource potential for agricultural production. Among the key directions of state policy are identify the priority areas of innovation at three levels: national, regional and local; creating the mechanisms for support the innovation activity; protection of rights and interests of subjects of the innovation activity; financial assistance to enterprises if the innovative projects are executed; encouragement of bank institutions that allocate funds to implement of innovative projects; introduction of a special tax regime for agrarian enterprises, that implementing the innovations; development of modern innovation infrastructure.

Another important instrument of state policy is price regulation. Due to the relatively low selling price in agriculture (realization prices on the separate types of products are below than prime prices) carried the unjustified redistribution of agrarian income in behalf of processing industry and trade (Babenko & Bondarevska, 2013).

In turn, the price level influences on possibility of timely payment by the enterprise of credits, taxes and duties, providing the labor payment and motivation. In this situation it is reasonable to introduce the price control mechanism to ensure a positive profitability of major agricultural products. The price aspect of state policy should be to rebuild through the introduction of regulated prices on basic types of crop and livestock production of agrarian enterprises, including: corn, sunflower, sugar beet, milk, livestock cattle, pigs and poultry. The introduction of regulated prices will leverage to additional financial resources and strengthening of state control by development of the agricultural sector. Also, using the price mechanism a decision of other actual problem becomes possible - establishing equal relations between industries and agriculture.

Decision of key problems of agriculture depends on other aspects that are also regulated by the state: financing and insurance. In foreign countries credit system includes not only commercial banks but also other financial institutions (credit funds, credit unions, etc.).

The credit system in Ukraine is not enough developed now. However, the state is able to control the quality of credit services and to provide the effective activity of credit infrastructure on the whole.

The system of insurance of agricultural enterprises matters in case of compensation given by natural disasters. An important function of the state is the legislative regulation of relevant processes.

Among the main problems that need to be resolved are building of rural infrastructure, providing of high living standards for rural population. At this moment a large number of working-age population migrate from villages to big cities for search of work and achieve the high social status.

Prestige of agricultural labor declines, primarily due to the low level of payment. The involvement of young people to rural areas and softening of migratory processes remain the actual questions. Particular attention should be paid to creating of new workplaces; increase of labor payment level; create the attractive credit system; improvement of education and training system, improving the transport and communication infrastructure;

expansion of the network of educational, recreational, cultural and sporting facilities.

To our opinion, optimally economic model for Ukraine can become the using of wide instruments of the state regulation taking into account the action of market laws. In this case, the functions of the state will belong to the legislative providing of agrarian sector; defense of competition as the main regulator of the market mechanism; rational distribution of incomes and resources to change the structure of the national product; providing of stabilizing of the economy growing; establishment of control for the level of inflation and employment of population and so on.

Practical experience has shown, that state support of agriculture yet in Soviet time was accompanied of positive social and economic growth in certain periods. In particular, in the year 1990 it was achieved the highest indicators of agricultural development (Bondarevska, 2013).

However, state intervention in the economic processes should be carried out only on a scientific basis. Otherwise the consequences could be disastrous.

Well-known is the fact that in the early 90s of XX century was conducted the agricultural reform as dividing by shares of land resources, division of a large collective enterprises into many small farmers, most of whom have not been able to survive in the competition. In addition, this policy was reflected in the liquidations of the scientific achievements of Soviet scientists and farmers that were used in production during many years. It's advanced production techniques, sustainable crop rotations, new technologies and others.

According to the opinion of the researchers, the basis of crop rotations was destroyed by the fact that in our country the agricultural production was transformed from the planned into the spontaneous, which subject only to the market. This phenomenon is not understood in terms of an understanding of whole civilized world, and how understand the market relations on a village the vast majority of people in our country, beginning from simple producers and concluding high state officials (Eshchenko & Opryshko, 2011).

At that time a large number of farmers have decided to unnecessarily expand the sowing areas of individual crops. It leading to violation of the scientifically grounded crop rotation and by this caused to decrease of gross output of crop production within 5%.

The consequences of negative processes can be seen today. The disadvantage of the structure of modern agricultural production is the so-called "Sunflower boom", resulting in a significant increase in production of sunflower on a fairly large acreage, and the failure of basic conditions of farming - the right alternating rotation of crops. Among the consequences of this behavior of producers are decreasing of soil fertility, reduction in yields. This is not only because of the policy of agricultural enterprises relatively to maximization of profits, but also due to a lack of state regulation.

It should be noted that the issue of state regulation of the economy associated with the name of the British economist John Keynes. Judging the group of Ukrainian scientists, the main areas of state regulation of Keynes are (Amosov, Syvokon', Stativka, & at al, 2013):

- budgetary tax regulation, which involves the manipulation of government purchases, transfer payments and taxes;
- credit and monetary regulation, including the freezing of nominal and decline the real wages, price increase, regulation of the interest rate, conducting securities transactions; lending;
- the use of "moderate inflation", which allows increase the business activity and employment through the growth of prices; and "regulated inflation", which involves the introduction of the practice of deficit financing, issuance of money for their lack;
- redistribution of income in favor of social groups that receive the lowest incomes for increase demand and growth money demand of mass buyers;
- conduction of the full employment policy aimed at preventing significant unemployment, expanding social security system.

According to the opinion of domestic scientists, the market functionality exposed to regulatory mechanism established by the state, which defines the parameters and limits of its designs, limiting the actions of the "invisible hand". So it is important to form the infrastructure of institutions of market and information support of small

producers. And professional associations and civil society must play the interim role for consolidation the efforts, which determine the competitiveness of agricultural producers (Shpykulyak, 2010).

Achieving of high rates of development of the agrarian sector of economy is determined by the competitive position of agricultural enterprises. Indicators of its activity must be considered during creation of the state regulation model. Consequently, the indicators of efficiency at the local level are production effectiveness (labor productivity, product profitability, profit); price and quality of products; liquidity and solvency of production. The certain indicators at the sectorial and regional levels are the average figures of financial and economic activity of producers, foreign trade balance, and gross value added per one employee. At the national level the indicators of foreign trade, productivity of production factors, balance of trade of agricultural products, the level of rural employment and other quality characteristics of the international division of labor were taken into account (Mohylnyi, 2005, p. 366).

Table 1. Indicators of effectiveness of the use of agricultural lands of Ukraine and other countries of Europe

Countries	Gross products of agriculture on 1 hectare of agricultural lands, euro	Land of capacity, hectares / 1000 euro of gross products
Ukraine	268.7	3.72
EU countries (15 countries)	2 189.2	0.46
Germany	2 442.6	0.41
France	2 188.0	0.46
Czech Repuplic	899.0	1.11
Poland	783.9	1.28
Bulgaria	685.1	1.46

Source: (Trehobchuk, Skurska, Yaroviy, & Pradun, 2004, p. 42)

Thus, the effectiveness of agrarian complex at the national level is formed due to high indicators of agricultural enterprises. The particular importance belongs to the effectiveness of the use of land, financial, human, material and technical resources, as expressed through the indexes of productivity, profitability, capital productivity, capital intensity and equipment of funds. Currently in Ukraine there are untapped reserves as to increase of the effectiveness of agricultural production, especially in comparison with other countries (Table 1).

According to the analysis of proper indexes, the gross products of agriculture of Ukraine in a calculation on 1 hectare of agricultural lands is below in 8 times, compared with the EU countries. And land of capacity is higher in 7 times accordingly. Thus, there is a need for more efficient use of available resources.

3 CONCLUSIONS

Each state of the world is interested in increase of efficiency of agricultural production. That is why the progressive methods and instruments of state influence should be used. Effective management of social and economic processes will enable the creation of conditions for the rational use of available resources and increase of efficiency.

Therefore, the state policy with regard to the stable development of agriculture includes:

- perfection of legislative and normative basis;
- increase of budgetary payments and dotations in the development of agriculture and clear control of efficiency of its use;
- price policy as establishment of the controlled prices on the basic types of agrarian goods;
- forming of large integrated agricultural enterprises with retooling of material and technical base and introduction of innovations;

- use of elements of concessional taxation of agricultural enterprises;
- providing agrarian sector by the institutes of credit and insurance infrastructure;
- increase of payments of agricultural labor, the use of effective mechanisms of labor motivation;
- recovery of rural areas, expansion of educational, health, cultural and sports establishments in rural areas.

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Received for publication: 23.03.2014
Revision received: 30.09.2014
Accepted for publication: 11.10.2014

How to cite this article?

Style – **APA** *Sixth Edition:*

Bondarevska, K. (2014, 07 15). State regulation as a factor of sustainable economic development. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 23-31. doi:10.12709/mest.02.02.02.03

Style – **Chicago** *Fifteenth Edition:*

Bondarevska, Kseniia. 2014. "State regulation as a factor of sustainable economic development." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 23-31. doi:10.12709/mest.02.02.02.03.

Style – **GOST** *Name Sort:*

Bondarevska Kseniia State regulation as a factor of sustainable economic development [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 23-31.

Style – **Harvard** *Anglia:*

Bondarevska, K., 2014. State regulation as a factor of sustainable economic development. *MEST Journal,* 15 07, 2(2), pp. 23-31.

Style – **ISO 690** *Numerical Reference:*

State regulation as a factor of sustainable economic development. **Bondarevska, Kseniia.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 23-31.

MEST Journal
DOI 10.12709/mest.02.02.02.04

EUROPEAN MARKETING - CONCEPT FOR EFFICIENT EXCHANGE OF THE SINGLE MARKET OF THE EUROPEAN UNION

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JELcategory: **J11, A14**

Abstract

The scale of economic and political integration of the European Union is unprecedented within the whole history of mankind and in many areas it exceeded the level of cooperation between territorial communities and some free federations. European Union gives the current configuration of European countries, modern and sustained nature. By the emergence and gradual enlargement of the EU is formed the common market, which forms a strong economic area without internal frontiers with the free movement of goods, persons, services and capital. Currently market represents 40% of world trade and it is the largest internal market with fixed terms applied to all EU countries. It is alliance of 27 states, with their own traditions, manners, languages, culture and religion, into a multinational unit where the country differences intersected. Common market requires a specific marketing approach and the concept must take into account changeable market conditions, depending on country where we do business.

In present time European Union includes many different countries, which are difference in economy development, size, cultural, tongues, religion, habits and history. The main aim of EU is to make up economy and currency union, which is development, competitive ability and could be successful in the global economy. The important task of the integration is to support competitive ability of all member countries and its companies and creating the common market, where can be European marketing helpful in this case.

Keywords: European Union, European marketing, marketing conception, global marketing, intercultural marketing, segmentation, convergence, divergence

1 INTRODUCTION

The European Union currently connects various countries with different economic maturity, size, culture, languages, religions, traditions and history. Its aim is to create an advanced and competitive economic and monetary union, which can promote in a global world economy. An important task in rendering the Union should therefore be to promote the competitiveness of all its Member States and the individual companies within these states and the formation of a single European market.

With the emergence and gradual enlargement of the EU with more countries a single market was

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formed, creating a strong economic area without internal frontiers in which the free movement of goods, persons, services and capital is secured. Currently, it represents 40% of world trade and is the largest internal market with fixed terms applicable to all member countries of the European Union. It is a union of 27 states that have their own traditions, language, culture and religion into a single multinational entity where those differences between countries stir and overlap. Such an integrated market requires to apply a specific marketing approach, which must take into account changes in market conditions (for example, different legislative conditions), depending on which country we make business in. The main cause that European marketing emerged was the formation of a single internal market in 1993, which now represents an area with 491,481,700 inhabitants. A specific feature of the EU market is the fact that the single market, despite the unification of common norms and standards and the effort for a gradual convergence of economic strength of individual countries and regions is still a highly heterogeneous market.

The aim of this project in this context is to bring the formation and content of European marketing as a new concept of analysis and to study a large and heterogeneous European market which brings both opportunities and risks for businesses that want to promote in this fiercely competitive global environment.

2 THE ORIGIN AND NATURE OF EUROPEAN MARKETING

European Marketing is a response to the emergence of the large European market by broadening the scope of its examination of the formerly separate markets for a multinational and multicultural market. Extending the application areas of marketing and adapting it to different situations causes that the current marketing is increasingly confronted with the internationalization and globalization of businesses. In relation to the markets that differ by economic, demographic, social and cultural characteristics, the question that arises is how to align customer requirements with the needs for standardization, which enables productivity growth. The answer to these questions is the concept of European marketing as part of a global marketing approach, whose substance and implementation is an object of discussion.

European Marketing presents a new concept of marketing in the European Union with regard to the process of unification and globalization. European Marketing combines a global and a local approach based on the strategy of standardization with regard to cultural conditions and specifications of the European Union. It can be defined as an adaptation of strategies and elements of the marketing mix, i.e. of product, distribution, and pricing and communication policy to the European single market conditions. The main objective of the European Marketing is to correctly define the cultural specificity of the European market and at the same time take into account different cultural conditions in countries and regions of the single European market.

European marketing as a discipline originated in the late seventies and early eighties under the German school of marketing theory in response to the political processes of the single European internal market and the subsequent processes of globalization of the world economy and the growth of international competition. The initial vision for the European market was to create a common market in the European area. Later, after the establishment of the European Community, this idea was transformed into a "European industry for global competition" (Halliburton & Hunerberg, 2004, p. 245).

McDonald and Harris characterized the European marketing as marketing, similar to international marketing, because it involves different decisions necessary to sell products launched across the country's borders. Borders are barriers that differentiate European marketing from domestic marketing. Of course, EU Member States have lower barriers than non-member countries. Euro area members use the same currency - the euro, which represents zero risk in the exchange rate and a zero cost of monetary transaction. According to the authors, the basis of European marketing is the creation and development of means to achieve legal, economic, social and cultural conditions in European countries, which may be helpful for mutual business transactions (Harris & McDonald, 2007).

When comparing the European market with a national market the differences that arise are quite significant. They are not only in competition, multiplicity of product variations, but also in different distribution systems. The European market brings a more competitive fight, but on the other hand, businesses can benefit from economies of scale resulting from the size of the market. It is also contributing to the creation of closer cooperative relations between firms, which may increase the efficiency of research and development activities. Greater efficiency in logistics and distribution is also foreseen in the future. Since there is large number of consumers and business customers in the European market, it is assumed, that there will be more product variations than on the national markets (see table 1).

Table 1. The Intensity of the Relationship between National and European Marketing

National Marketing	Category	European Marketing
weak	***competition***	strong
high	***price discrimination***	low
low	***efficiency of research and development***	high
low	***efficiency in logistics, marketing and distribution***	high
minimal	***product variations***	various
low	***cooperation and coordination***	high
dispersive	***activity configuration***	concentrated
small	***range of benefits***	large

Source: (Kaynak, 2004, p. 23)

The development of the European market has caused the creation of a new approach to marketing management. The European Union is a very interesting special case in terms of international marketing, because it integrates a comprehensive marketing environment with typical elements of national, supranational and international characteristics. Some economic, legal, political and technological factors of the marketing mix of European Union countries cannot clearly determine whether they are of a national or international nature, since they represent a combination of national and international policies and rules. Changes occurred mainly in the macroeconomic environment, which helped to link internal and international marketing. Euromarketing on the one hand emphasizes the national characteristics of the market, on the other hand, it points to the international aspects of the market. (Table 2).

Table 2. The Comparison of National and International Marketing

National marketing	Euromarketing	International/global marketing
National language	National Language / English	National Language / English
No customs	No customs	Customs/ custom fees
No border control	No border control	Border controls
No export license	No export license	Export license
No import license	No import license	Import license
Uniform standards/directives	Uniform standards/directives	Different standards/directives
Available market information	Available market information	Limited market information
Uniform culture	Different cultures	Different cultures
Single tax	Base tax	Variable tax
Developed means of marketing	Developed means of marketing	Various means of marketing
Single currency	Single currency	Several currencies
National segmentation	Euro-market segmentation	Extensive segmentation

Source: (Kaynak, 2004, p. 22)

As shown in Table 2, European marketing represents a transitional stage between the internal and international marketing. It has characteristics of internal marketing, along with cultural diversification and globalization. An effective marketing strategy for the European market should be a combination of internal and internationalist marketing approach with a global attitude. A specific feature of European marketing is that it perceives Europe as a clearly geographically defined segment that extends homogeneous in terms of Europe, but different in terms of other global regions. The central concept of European marketing is therefore market segmentation, which uses national boundaries as the basic criteria for its segmentation policy. From the point of view of global marketing, the world performs as one market segment, while European marketing perceives individual European economies as different countries with their national specificities. European market should, in terms of a global marketing strategy, take over at least the part which foresees the use of standardization and uniform marketing methods. The definition of whether the European market is a good place for global marketing and globalization strategy depends on the analysis of macro environment, which from the business perspective can serve as a first step in deciding on euromarketing strategies. Arguments of some authors speaking in favor of a global approach may be reduced to two complementary directions - customer convergence (global consumer or the European consumer) and the efficiency of global products (global product or europroduct) or customer divergence resulting mainly from cultural differences. We agree with those who support a global perspective, and see European marketing as a transition from national to global marketing approach, however, with the emphasize on intercultural marketing approach.

This concept responds to the weaknesses of global marketing approach that does not sufficiently take into account the socio - cultural differences in consumer markets, does not allow a rapid response to the competitive process and can greatly discourage managers in foreign subsidiaries, which are regulated by central decisions of the parent companies. The trend towards intercultural marketing is based on the fact that consumer behavior is strongly influenced by social and cultural factors. Experience shows that the more a country is rich and the more it is advanced, the more different are needs and desires of individual segments. A significant difference between global and intercultural marketing is also that in the case of global marketing the realized products are originally designed for the domestic market, and that all procedures and marketing mix are standardized. Intercultural marketing on the other hand, uses a priori an international approach (Machkova, 2006). A company already at the stage of research and development of new products expects their application on the global market and develops international products (cars, which are easy to assemble according to the needs of the target market). The current marketing trend is based on a maximum effort in the use of standardized procedures, in which a company adapts to local conditions. The intercultural marketing concept is best characterized by the slogan "Think global, act local".

Enterprises applying intercultural marketing take into account the socio-cultural differences of consumers and focuses on a relatively inexpensive adaptation primarily in these following areas:

- Product policy – aims to change products to match local conditions or customer wishes (e. g. Phillips started earning in Japan only after their coffee shrunk to fit into smaller Japanese kitchens and adapted its shavers to better fit smaller Japanese hands). Even big global corporations are now better adapted to local cultural values and traditions instead applying the same approach worldwide (Although McDonald's uses the same basic operating procedures in all restaurants, it adapts its menu to local tastes).
- Brand-name policy – foreign producers use famous domestic brands to manufacture products, they select suitable branded products for the target market. (Nokia modified their mobile phone product line 6100 for every major market).
- Pricing policy – in countries with a low purchasing power, the offer focuses on basic products without any supplements, a smaller consumer package at a lower price, or on offering consumer loans.

- Distribution policy – foreign trade operators adjust the opening hours of shops according to the local customs of the country, they adapt the assortment structure to the requirements of consumers, they use local delivery systems etc.
- Communication policy – foreign companies adapt advertising and other communication tools to local customs, for example. Sponsoring a favorite sport, charitable activities, performances of local celebrities in commercials etc. (For example, Austria and Italy restricts advertising aimed at children in Saudi Arabia a woman cannot appear in an advertisement). In various European countries, for example, the time devoted to television advertising varies from four hours in France to a total ban in the Nordic countries, where the preferred form of advertising is in the press.

Adapting to every single country is too expensive and therefore European Marketing Management currently emphasizes the concept of social-cultural zones. This concept is based on the assumption that it is possible to identify certain geographical areas with similar socio-cultural characteristics, which enables to use a single marketing approach for several countries.

Basically, it can be compared to an approach of Perry (Halliburton & Hunerberg, 2004) which says that marketing is a unique phenomenon consisting of exogenous factors that are part of a continuous process of shaping and combining marketing strategies due to changes in local, regional and world development. Although this approach shows some similarities of individual marketing systems, but it also confirms their natural diversity. Euro-marketing with regard to the differences would more closely resemble the global than the multinational approach. There is a difference between the multinational marketing and the global approach to marketing. The global approach is looking for commonalities between markets, promotes product homogeneity, image and marketing communication and determines whether a single product or an entire marketing system applies to the world market. In contrast, multinational marketing is looking for the best adaptation of all marketing tools and marketing strategies for each country respectively for each region. Not only many Europeans interpret the European market as a global market space, but this view is also shared by executives in multinational companies.

European marketing from this point of view consists of a set of theoretical and practical principles of corporate activities on a specific single market of the European Union. These principles are established by extensively harmonized standards of commercial law, consumer protection, competition and a market devoid of protectionist tariff barriers at the borders of the internal markets between the countries – members of the EU. Their foundation is based on a special freedom of final consumers, businesses and markets, which are different as a result of the history of different levels of social and economic development of the countries that form the EU and the European common market. Such an integrated market also requires to apply a specific marketing approach. Marketing must take into account the change in market conditions (for example, different legislative conditions), depending on which market we make business. Although the EU provides central business conditions certain powers are left to individual countries (e.g. the sale of genetically modified foods). This means that a company that wants to operate in the long term and be successful in this market must properly adapt its marketing program to the chosen segment in the common market. Gradual removal of barriers between countries and the emergence of a free market created an opportunity for consumers to shop anywhere. From this perspective, the countries forming a common market have become competitors with each other and it is in their interest to provide the best conditions for business and also attract the most customers.

3 SPECIFICS OF EUROPEAN MARKETING

One of the key questions in the European marketing is whether market segments may be limited by national borders within Europe, because Europe as a whole is too heterogeneous to act as one large homogenous segment. In this context Lipianska says that the market of the European Union has not been a homogeneous marketing environment for a long time. On the contrary, the EU market is characterized by different

characteristics both in terms of national and regional. The European Union has created a highly integrated market environment, which consists of various parts, which vary in their differences in political, legal, technological, cultural and economic environments Hence the fact that customer segments are no longer bounded by national borders on the market of the European Union, but have a similarity score in the shopping behavior in different EU countries. Another issue for discussion in the drafting of European marketing is the definition of the character of the segments. When there is an identical segment on a completely different side of the world, it means that one cannot assume any unification of European segments. One solution is to graduate segments based on their exclusivity. Another important condition for segmenting Euro-marketing is to define the European Community. Given the emergence of a single large EU market it can be said that Europe is becoming more congruent to the European Union even though there are some exceptions. These include Switzerland, Norway, and the former countries of Yugoslavia which, however, may soon be integrated into the EU. Additional exceptions may be the Ukraine, Belarus, Moldova, which because of their peripheral border between Europe and Asia do not belong to the relevant countries Turkey, however, acts as a specific country, not only because of its market size, but especially its geographic location.

The European Union has undergone many changes since its inception that gradually affect its appearance and therefore marketing activities. These changes have fundamentally affected all parts of the European Union, particularly the actual business environment in Europe. European Marketing according to the European Commission is now determined by the following conditions (EuropeanCommision, 1997):

- The creation of a common European market has caused changes in conditions for the implementation of marketing strategy.
- The largest differences occur in the patterns of consumption and consumer behavior.
- The market remains inconsistent.
- A new approach to market segmentation is needed.
- The competitive environment is changing.
- The unification of purchasing condition.
- The importance of retail distribution systems is growing.
- The development of self-service forms of selling.
- The increase in the number of large business units.
- The development of retail without retail space.

It is known that marketing activities involve a complex process that is carried out in order to develop and provide customers with the desired goods and services. At the core of these activities are marketing research of environmental factors, identification and characterization of species and product lines preferred by different types of customers, market testing of products, determining the market price of products in order to maximize results and profits, providing relevant and accurate information to customers on all product properties, influencing the buying behavior of consumers. These activities include the distribution and after purchase service and maintenance designed to enhance the level of future services. Despite the fact that all listed activities are in accordance with the general rules of marketing, marketing in an international environment and thus the marketing in the European Union requires a different approach from those which are customary for individual national markets. In this case, it is important to assess the factors that bind to the political, economic , legal and cultural environment that differ marketing in the European context from marketing on the domestic market or in a non-European international environment.

European Marketing has some typical characteristics and features. What makes it different from for example, the U.S. marketing, whose primary objective is to weaken competition and mainly practice so called battle-marketing, is that its priority goal is to grab the attention of customers, know their needs and wishes the best and adapt to them.

European Union legislation, distribution systems and the entire economic growth of their countries is leading towards the harmonization of the European market. The best examples of this are young people who prefer the same brand clothing, have a similar lifestyle, and listen to the same

music. Also, managers have a similar way of life and rhythm. On the other hand, we see how the regional traditions mix and mingle. For example, drinking beer, which is typical of northern Europe, has increased drastically in the southern hemisphere in recent years, and vice versa. From this perspective, a marketing concept can be understood as an effort to increase the likelihood of business success and to achieve marketing goals on the EU market. It is thus an approach that does not want to leave the outcome of the business only to chance, but it is rather systematically trying to create maximum favorable conditions and assumptions with the most diverse procedures and possibly doing that by noticing what customers in the European Union want, what they prefer, and what their wishes, desires and needs are.

The current marketing must therefore give priority to the following areas:

- A thorough knowledge of the market and the environment – it is the environment in which the company wants to operate by collecting the required number of pertinent and relevant information from primary and secondary sources. If the company wants to do business in the single European market, it has to focus on the acquisition of information: general information about the country, specifications peculiar to the relevant market, market growth, profit potential, market size etc. The basis for analyzing the opportunities offered by the country consists of market research based on the information above. Each environment is characterized by different economic, cultural and legislative conditions. Cultural conditions are particularly important for marketing analysis, because different hobbies, tastes and lifestyle affect different consumer behavior.
- Market segmentation – Market segmentation is one of the essential elements of a successful marketing. Customers differ in their interests, needs, wants, income, residence, etc.
- Keeping your customer – customer retention is a very important element. A prerequisite is to create a positive and effective relationship with customers through an understanding of its current and future needs and wishes, creating an offer of a product or a service that will satisfy him. Customer satisfaction is influenced by several aspects: product (the design and processing, design), sales activities (marketing communication), after-sales activities (servicing, warranty, spare parts), corporate culture at all level
- Competition analysis – in terms of price, quality and innovation of product, availability of products, services, servicing, etc.

Creating a universal solution for all European products is impossible. Even within the same industry European segments and regional segments can coexist. For example, on the beer market there is a small amount of europroducts, one of which is Heineken, which in Germany coexists with a thousand other different brewing products. Any efforts to standardize in a higher level could be, due to the existing differences between European countries, considerably inappropriate.

Marketing focused on European markets is therefore based on the application of three approaches:

- global approach – useful in situations with an identifiability of universal consumer characteristics on individual national European markets (e.g. trends in rational diet),
- local approach – useful in identifying different patterns in consumer behavior in local markets , different economic and social levels of the different markets (e.g. differences in GDP between EU members,
- regional approach – useful in expanding to markets with similar economic, cultural, historical or geographical characteristics (e.g. Scandinavian countries, German speaking countries, etc.)

Joining the three approaches helps to use a strategy of standardization while taking into account cultural conditions and specifics of the EU countries. The future of European marketing is directed to complementarity and cooperation of the entire distribution chain for the consumer.

European drivers may, on the demand side, lead to the convergence of characteristics of European consumers, and on the supply side, to the standardization of European marketing strategy. Standardized marketing can entail conformal side

effects on the supply side, supported by cost or price factors that will determine the intensity of euro-marketing convergence structure. European - versus global marketing structure is shown closer on the chart 2.

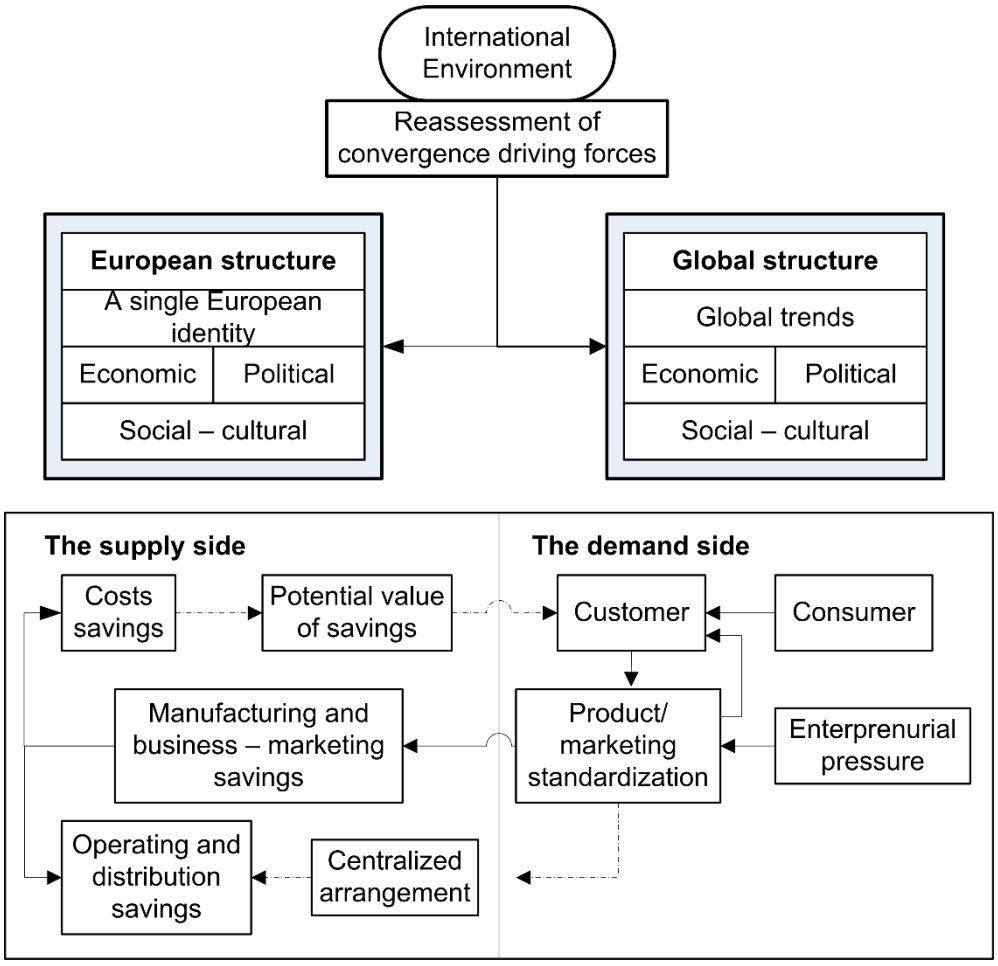


Chart 2: Structure of European Marketing

Source: (Harris & McDonald, 2007, p. 12)

In recent years, predictions of European divergence recede into the background, while views on European conformity are still pronounced. This is reflected especially on the supply side, where the effects caused by European integration are crucial to the homogeneity of the market. These predictions also indirectly support the convergence on the demand side. In the case that these premises are valid, then corporate decisions about the right market strongly influence strategic options, which may lead to certain forms euro-segmentation. From the perspective of a longer time horizon, it may be a transitional phase leading to a full global access.

4 CONCLUSION

European Marketing therefore has much in common with the international marketing and especially in the management and decision-making on the implementation of the products (goods and services and their combinations) abroad. The borders between states become barriers which can be considered as a fundamental difference between the European and international marketing. Although the intensity of these barriers varies within individual EU countries, their common interests are marketing activities. According to Harris and McDonald, the main difference between the European and internal marketing is based on the cross-border trade barriers. These barriers vary according to

whether the country is a part of the EU and the Eurozone. Countries outside Europe seeking to enter the market are exposed to a complicated marketing environment, and while there are similarities in the economic and legal environment, there are also big differences in cultural and social fields. European Marketing can therefore be described as a special type of international marketing with some common features with the domestic marketing of those countries, among which are minimal differences in the legal, economic, social and cultural fields. This means that the founding countries of the EU and the euro-zone countries have, among all EU countries, the lowest level of political and economic barriers. Many marketing experts expect that the single European market will promote the convergence of tastes of European consumers and promote a "European consumers". Convergence of values, lifestyles, beliefs, habits and tastes does not mean that their needs will converge as well. They may vary on individual national markets, as well as the purchasing power and the consumption habits of buyers differ. Europe as a mixture of different cultures and systems thus represents marketing opportunities for businesses both in the field of production and in the filled of trade. While it is possible to combine the social and demographic characteristics and marketing strategies of firms producing consumer products to approximate the styles of individual European countries in the new global economy, diversity will be as important as the convergence point. Businesses should therefore identify regional, national and local specificities and develop appropriate marketing strategies which take account of this diversity. Pan-European strategies may be cost-effective in places where consumers have similar cultural values and homogeneous tastes concerning a particular product or service. Standard marketing program can be used for example in the field of luxury products (such as jewelry, Rolex watches, sports cars, etc.), which requires a small number of like-minded customers, or in the field of fashion articles that young people buy in all countries (global approach). Social and cultural characteristics, however, are significantly different across Europe, and this requires an adaptation of marketing strategies, depending on the regional markets of the EU. It can therefore be said that Europe is still far from becoming a single internal market for European companies, but also far from becoming a single market for foreign companies outside Europe.

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Acknowledgement

The paper was written within the work on the project KEGA No.1/0046/14 **"**Euromarketing - factors and determinants of the single European market"**,** at the Faculty of Commerce, University of Economics in Bratislava".

Received for publication: 30.01.2014
Revision received: 28.05.2014
Accepted for publication: 18.06.2014

How to cite this article?

Style – **APA** *Sixth Edition:*

Čihovska, V. (2014, 07 15). European marketing - concept for efficient exchange of the single market of the European Union. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 32-41. doi:10.12709/mest.02.02.02.04

Style – **Chicago** *Fifteenth Edition:*

Čihovska, Viera. 2014. "European marketing - concept for efficient exchange of the single market of the European Union." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 32-41. doi:10.12709/mest.02.02.02.04.

Style – **GOST** *Name Sort:*

Čihovska Viera European marketing - concept for efficient exchange of the single market of the European Union [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 32-41.

Style – **Harvard** *Anglia:*

Čihovska, V., 2014. European marketing - concept for efficient exchange of the single market of the European Union. *MEST Journal,* 15 07, 2(2), pp. 32-41.

Style – **ISO 690** *Numerical Reference:*

European marketing - concept for efficient exchange of the single market of the European Union. **Čihovska, Viera.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 32-41.

MEST Journal
DOI 10.12709/mest.02.02.02.05

STRATEGY ANALYSIS AND CHOICE

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JEL category: **L1, R3**

Life is full of lousy options.
Peter Drucker

Abstract

Strategy analysis and choice seek to determine alternative courses of action that could best enable the firm to achieve its mission and objectives. They involve subjective decisions making based on the objective information. This article focuses on generating and evaluating alternative strategies, as well as selecting strategies to pursue. It introduces concepts that can help strategists generate feasible alternatives, evaluate those alternatives, and choose a specific course of action. Behavioral aspects of strategy formulation are described, including politics, culture, ethics, and social responsibility considerations. Modern tools for formulating strategies are described, and appropriate role of a board of directors is discussed. Special attention is paid to the process of generating and selecting strategies including a comprehensive strategy-formulation framework, as well as the cultural aspect and the politics of strategy choice.

Keywords: *strategy, analysis, mission, cultural aspects, politics of strategy choice, governance*

1 THE NATURE OF STRATEGY ANALYSIS AND CHOICE

This article focuses on generating and evaluating alternative strategies, as well as selecting strategies to pursue. Strategy analysis and choice seek to determine alternative courses of action that could best enable the firm to achieve its mission and objectives. The firm's present strategies, objectives, and mission, coupled with the external and internal audit information, provide a basis for generating and evaluating feasible alternative strategies.

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Unless a desperate situation confronts the firm, alternative strategies will likely represent incremental steps that move the firm its present position to a desired future position. Alternative strategies do not come out of the wild blue bounder; they are derived from the firm's vision, mission, objectives, external audit, and internal audit; they are consistent with, or build on, past strategies that have worked well. Note from the "Natural Environment Perspective" box that the strategies of both companies and countries are increasingly scrutinized and evaluated from a natural environment perspective. Companies such as Wal-Mart now monitor not only the price its vendors offer for products, but also how those products are made in terms of environmental practices. A growing number of business schools offer separate courses and even a concentration

in environmental management or *sustainability*, the idea that a business can meet its financial goals without hurting the environment.

2 THE PROCESS OF GENERATING AND SELECTING STRATEGIES

Strategies never consider feasible alternatives that could benefit the firm because there are an infinite number of possible actions and an infinite number of ways to implement those actions. Therefore, a manageable set of the most attractive alternative strategies must be developed. The advantages, disadvantages, trade-offs, cists, and benefits of these strategies should be determined. This section discusses the process that many firms use to determine an appropriate set of alternative strategies.

Identifying and evaluating alternative strategies should involve many of the managers and employees who earlier assembled the organizational vision and mission statements, performed the external audit, and conducted the internal audit. Representatives from each department and division of the firm should be included in this process, as was the case in previous strategy-formulation activities. Recall that involvement provides the best opportunity for managers and employees to gain an understanding of what the firm is doing and why and to become committed to helping the firm accomplish its objectives.

All participants in the strategy analysis and choice activity should have the firm's external and internal audit information by their sides. This information, coupled with the firm's mission statement, will help participants crystallize in their own minds particular strategies that they believe could benefit the firm most. Creativity should be encouraged in this thought process.

Alternative strategies proposed by participants should be considered and discussed in a meetings or series of meetings. Proposed strategies should be listed in writing. When all feasible strategies identified by participants are given and understood, the strategies should be ranked in order of attractiveness by all participants, with 1 = should not be implemented, 2 = possibly should be implemented, 3 = probably should be implemented, and 4 = definitely should be implemented. This process will result in a prioritized list of best strategies that reflect the collective wisdom of the group.

2.1 A Comprehensive Strategy-Formulation Framework

Important strategy-formulation techniques can be integrated into a three-stage decision-making framework, as shown in Table 1. The tools presented in this framework are applicable to all size and types of organizations and can help strategists identify, evaluate and select strategies.

Table 1. Matching key external and internal factors to formulate alternative strategy

Key internal factor		Key external factor		Resultant strategy
Excess working capacity (an internal strength)	+	20 percent annual growth in the cell phone industry (an external opportunity)	=	Acquire Cellophane, Inc.
Insufficient capacity (an internal weakness)	+	Exit of two major foreign competitors from the industry (an external opportunity)	=	Pursue horizontal integration by buying computer factory
Strong R&D expertise (an internal strength)	+	Decreasing numbers of younger adults (an external threat)	=	Develop new products for older adults
Poor employee morale (an internal weakness)	+	Strong union activity (an external threat)	=	Develop a new employee benefits package

Stage 1, of the formulation framework consists of the EFE Matrix, the IFE Matrix, and the Competitive Profile Matrix (CPM). Called the *Input Stage*, Stage 1 summarizes the basic input information needed to formulate strategies. Stage 2, called the *Matching Stage* focuses upon generating feasible alternative strategies by aligning key external and internal factors. Stage 2 techniques include the Strengths-Weaknesses-Opportunities-Threats (SWOT) Matrix, the Strategic Position and Action Evaluating (SPACE) Matrix, the Boston Consulting group (BCG) Matrix, the Internal-External (IE) Matrix, and Grand Strategy Matrix. Stage 3, called the *Decision Stage*, involve a single technique, the Quantitative Strategic Planning Matrix (QSPM). A QSPM uses input information from Stage 1 to objectively evaluate feasible alternative strategies identified in Stage 2. A QSPM reveals the relative attractiveness of alternative strategies and thus provides objective basis for selecting specific strategies.

All nine techniques included in *the strategy-formulation framework* require the integration of intuition and analysis. Autonomous divisions in an organization commonly use strategy-formulation techniques to develop strategies and objectives. Divisional analyses provide a basic for identifying, evaluating, and selecting among alternative corporate-level strategies. Strategists themselves, not analytic tools, are always responsible and accountable for strategic decisions. Lenz emphasized that the shift from a words-oriented to a numbers-oriented planning process can give rise to a false sense of certainty, it can reduce dialogue, discussion, and argument as a means for exploring understandings, testing assumption and fostering organizational learning. (Lenz, 1987) Strategists, therefore, must be wary of this possibility and use analytical tools to facilitate, rather than to diminish, communication. Without objective information and analysis, personal biases, politics, emotions, personalities, and *hallo error* (the tendency to put too much weight on a single factor) unfortunately may play a dominant role in the strategy-formulation process.

2.2 The Input Stage

The input tools require strategists to quantify subjectivity during early stages of the strategy-formulation process. Making small decisions in the input matrices regarding the relative importance of external and internal factors allows strategists to more effectively generate and evaluate alternative strategies. Good intuitive judgment is always needed in determining appropriate weights and ratings.

2.3 The Matching Stage

Strategy is sometimes defined as the match an organization makes between its internal resources and skills and opportunities and risks created by its external factors. (Grant, 1991) The matching stage of the strategy-formulation framework consists of five techniques that can be used in any sequence: the SWOT matrix, the SPACEMatrix, the BCG matrix, the IE Matrix, and in the Grand Strategy.

Table 2 Matching key external and internal factors to formulate alternative strategy

Key Internal Factor	Key External Factor	Resultant Strategy
Excess working capacity (an internal strength)	20 percent annual growth in the cell phone industry (an external opportunity)	Acquire Cellphone, Inc.
Insufficient capacity (an internal weakness)	Exit of two major foreign competitors from the industry (an external opportunity)	Pursue horizontal integration by buying computer factory
Strong R&D expertise (an internal strength)	Decreasing numbers of younger adults (an external threat)	Develop new products for older adults
Poor employee morale (an internal weakness)	Strong union activity (an external threat)	Develop a new employee benefits package

These tools rely upon information derived from the input stage to much external opportunities and threats with internal strengths and weaknesses. *Matching* external and internal critical success factors is the key to effectively generating feasible alternative strategies. For example, a firm with excess working capital (an internal strength) could take advantage of the cell phone industry's 20 percent annual growth rate (an external opportunity) by acquiring Cellphone, Inc., a firm in the cell phone industry. This example portrays simple one-to-one matching. In most situations, external and internal relationships are more complex, and the matching requires multiple alignments for each strategy generated. The basic concept of matching is illustrated in Table 2.

3 CULTURAL ASPECT OF STRATEGY CHOICE

All organizations have a culture. *Culture* includes the set of shared values, beliefs, attitudes, customs, norms, personalities, heroes, and heroines that describe a firm. Culture is the unique way an organization does business. It is the human dimension that creates solidarity and meaning, and it inspires commitment and productivity in an organization when strategy changes are made. All human beings have a basic need to make sense of the world, to feel in control, and make meaning. When events threaten meaning, individuals react defensively. Managers and employees may even sabotage new strategies in an effort to recapture the status quo.

It is beneficial to view strategic management from a cultural perspective because success often rests upon the degree of support that strategies receive from a firm's culture. If a firm's strategies are supported by cultural products such as values, beliefs, rites, rituals, ceremonies, stories, symbols, language, heroes, and heroines, then managers often can implement changes swiftly and easily. However, if a supportive culture does not exist and is not cultivated, then strategy change may be ineffective or even counterproductive. A firm's culture can become antagonistic to new strategies, and the result of that antagonism may be confusion and disarray.

Strategies that require fewer cultural changes may be more attractive because extensive changes can take considerable time and effort. Whenever two firms merge, it becomes especially important to evaluate and consider culture-strategy linkages.

Culture provides an explanation for the difficulties a firm encounters when it attempts to shift its strategic direction, as the following statement explains:

Not only has the "right" corporate culture become the essence and foundation of corporate excellence, but success or failure of needed corporate reforms hinges on management's sagacity and ability to change the firm's driving culture in time and in tune with required changes in strategies. (Allarie & Firsirotu, 1985) Another excellent article is "*Integrating Strategy formulation with organizational Culture*" (Shrivastava, 1985).

4 THE POLITICS OF STRATEGY CHOICE

All organizations are political. Unless managed, political maneuvering consumes valuable time, and subverts organizational objectives, diverts human energy, and results in the loss of some valuable employees. Sometimes political biases and personal preferences get unduly embedded in strategy choice decisions. Internal politics affect the choice of strategies in all organizations. The hierarchy of command in an organization, combined with the career aspirations of different people and the need to allocate scarce resources, guarantees the formation of coalitions of individuals who strive to take care of themselves first and the organization second third, or fourth. Coalitions of individuals often form around key strategy issues that face an enterprise. A major responsibility of strategists is to gain the support of key individuals and groups of individuals.

In the absence of objective analyses, strategy decisions too often are based on the politics of the moment. With development of improved strategy-formation tools, political factors sometimes dictate strategies, and this is unfortunate. Managing political relationships is an integral part of building enthusiasm and *esprit de corps* in an organization.

A classic study of strategic management in nine large corporations examined the political tactics of successful and proposals strategists. (Quinn,

1980) These political tactics are listed in the Thompson and Strickland's *"Strategic Management: Concepts and Cases)* (1984).

Successful strategists were found to let weekly supported ideas and proposals die through inaction and to establish additional hurdles or tests for strongly supported ideas considered unacceptable but not openly opposed. Successful strategists kept a low political profile on unacceptable proposals and strived to let most negative decisions come from subordinates or a group consensus, thereby reserving their personal vetoes for big issues and crucial movements. Successful strategists did a lot of chatting and informal questioning to stay abreast of how things were progressing and to know when to intervene. They led strategy on informal questioning, and sought to probe and clarify until a consensus emerged.

Successful strategies generously and visibly rewarded key trusts that succeeded. They assigned responsibility for major new thrusts to *champions*, the individuals most strongly identified with idea or product and whose futures were linked to its success. They stayed alert to the symbolic impact of their own action and statements so as not to send false signals that could stimulate movements in unwanted directions.

Successful strategies ensured that all major power bases within an organization were represented in, or had access to, top management. They interjected new faces and new views into considerations of major changes. This is important because new employees and managers generally have more enthusiasm and drive than employees who have been with the firm a long time. New employees do not see the world the same old way; nor do they act as screens against changes. Successful strategists minimized their own political exposure on highly controversial issues and in circumstances in which major opposition from key power centers was likely. In combination, these findings provide a basis for managing political relationships in an organization.

Because strategies must be effective in achievements on the marketplace and capable of gaining internal commitment, the following tactics used by politicians for centuries can aid strategists:

- ***Equality*** – It is often possible to achieve similar results using different means or paths. Strategists should recognize that achieving a successful outcome is more important than imposing the method of achieving it. It may be possible to generate new alternatives that give equal results but with far greater potential for gaining commitment.
- ***Satisfying*** – Achieving satisfactory results with an acceptable strategy far better than failing to achieve optimal results with an unpopular strategy.
- ***Generalization*** – Shifting focus from specific issues to more general ones may increase strategists' options for gaining organizational comment.
- ***Focus on Higher*** - ***Order Issues*** – By raising an issue to a higher level, many short-term interests can be postponed in favor of long-term interests. For instance, by focusing on issues of survival, the airline and automotive industries were able to persuade unions to make concessions on wage increases.
- ***Provide political Access on Important Issues*** –Strategy and policy decisions with significant negative consequences for middle managers will motivate intervention behavior from them. If middle managers do not have an opportunity to take a position on such decisions in appropriate political forums, they are capable of successfully resisting the decisions after they are made. Providing such political access provides strategists with information that otherwise might not be available and that could be useful in managing intervention behavior. (Guth & MacMillan, 1986)

5 GOVERNANCE ISSUES

A "director" according to Webster's dictionary is "one of a group of persons entrusted with the overall direction of corporate enterprise." A *bound of directories* is a group of individuals who are elected by ownership of a corporation to have oversight and guidance over management and who look out for shareholders' interests. The act of oversight and direction is referred to as *governance*. The National Association of

Corporate Directors defines governance as "the characteristic of ensuring that long-term strategic objectives and plans are established and that the proper management structure is in place to achieve those objectives, while at the same time making sure that the structure functions to maintain the corporation's integrity, reputation, and responsibility to its various constituencies." This broad scope of responsibility for the board shows how boards are being held accountable for the entire performance of the firm. In the Worlcom, Tyco, and Enron bankruptcies and scandals, the firm's board of directors were sued by shareholders for mismanaging their interests. New accounting rules in the United States and Europe now enhance cooperate-governance codes and require much more extensive financial disclosure among publicity held firms. The role and duties of a board of directors can be divided into four broad categories, as indicated in Table 3.

Table 3 Board of Director Duties and Responsibilities

1.	CONTROL AND OVERSIGHT OVER MANAGEMENT
	a. Select the Chief Executive officer (CEO). b. Sanction the CEO's team. c. provide the CEO with a forum. d. Ensure managerial competency. e. Evaluate management's performance. f. Set management's salary levels, including fringe benefits. g. Guarantee managerial integrity through continuous auditing. h. Chart the corporate course. i. Advise and revise policies to be implemented by management.
2.	ADHERENCE TO LEGAL PRESCRIPTIONS
	a. Keep abreast of new laws. b. Ensure the entire organization fulfills legal prescriptions. c. Pass bylaws and related resolutions. d. Select new directors. e. Approve capital budgets. f. Authorize borrowing, new stock issues, bonds, and so on.
3.	CONSIDERATION OF STAKEHOLDERS' INTERESTS
	a. Monitor product quality. b. Facilitate upward progression in employee quality of work life. c. Review labor policies and practices. d. Improve the customer climate. e. Keep community relations at the highest level. f. Use influence to better governmental, professional association, and educational contact. g. Maintain good public image.
4.	ADVANCEMENT OF STOCHOLDERS' RIGHTS
	a. Preserve stockholders' equity. b. Stimulate corporate growth so that the firm will survive and flourish. c. Guard against equity dilution. d. Ensure equitable stockholder representation. e. Inform stockholders through letters, reports, and meetings. f. Declare proper dividends. g. Guarantee corporate survival.

Until recently, boards of directors did most of their work sitting around polished wooden tables. However, Hewlett-Packard's directors, among many others, now log on to their own board Web site twice a week and conduct business based on extensive confidential briefing information posted there by the firm's top management team. Then the board members meet face to face and fully informed every two months to discuss the highest issues facing the firm. Even the decision of whether to locate corporations in countries with low tax rates would be reviewed by a board of directors.

Today, boards of directors are composed mostly of outsiders who are becoming more involved in organizations' strategic management. The trend in the United States, for example, is toward much greater board member accountability with smaller boards, now averaging 12 members rather than 18 as they did a few years ago. *BusinessWeek* magazine recently evaluated the boards of the largest U.S. companies and provided the following "principles of good governance":

1. No more than two directors are current or former company executives.
2. No directors do business with the company or accept consulting or legal fees from the firm.
3. The audit, compensation, and nominating committees are made up solely of outside directors.
4. Each director owns a large equity stake in the company, excluding stock options.
5. At least one outside director has extensive experience in the company's core business and at least one has been CEO of an equivalent–size company.
6. Fully employed directors sit on no more than four boards and retirees sit no more than seven.
7. Each director attends at least 75 percent of all meetings.
8. The board meets regularly without management present and evaluates its own performance annually.
9. The audit committee meets at least four times a year.
10. The board is frugal on executive pay, diligent in CEO succession oversight responsibilities, and prompt to act when trouble arises.
11. The CEO is not also the chairperson of the board.
12. Shareholders have considerable power and information to choose and replace directors.
13. Stock options are considered a corporate expense.
14. There are no interlocking directorships (where a director or CEO sits on another director's board). (Lavelle, 2002)

Just as directors are beginning to place more emphasis on staying informed about an organization's health and operations, they are also taking a more active role in ensuring that publicly issued documents are accurate representations of a firm's status. It is becoming widely recognized that a board of directors has legal responsibilities to stock-holders and society for all company activities, for corporate performance, and for ensuring that a firm has an effective strategy. Failure to accept responsibility for auditing or evaluating a firm's strategy is considered a serious breach of a director's duties. Stockholders, government agencies, and customers are filling legal suits against directors for fraud, omissions, inaccurate disclosures, lack of due diligence, and culpable ignorance about a firm's operations with increasing frequency. Liability insurance for directors has become exceptionally expensive and has caused numerous directors to resign.

More than 50 percent of outside directors at Fortune 500 firms have quit in recent years. (Fisher, 2005) A direct response of increased pressure on directors to stay informed and execute their responsibilities is that audit committees are becoming commonplace. A bound of directors should conduct an annual strategy audit in much the same fashion that it reviews the annual financial audit. In performing such an audit, a board could work jointly with operating management and/or seek outside counsel. Boards should play a role beyond that of performing a strategic audit. They should provide greater input and advice in the strategy-formulation process to ensure that strategists are providing for the long-term needs of the firm. This is being done through the formation of three particular board committees: nominating committees to evaluate the performance of top executives and determine the terms and conditions of their employment; and audit committees to give board-level attention to

company according and financial policies and performance.

6 CONCLUSION

The essence of strategy formulation is an assessment of whether an organization is doing the right things and how it can be more effective in what it does. Every organization should be wary of becoming a prisoner of its own strategy, because even the best strategies become obsolete sooner or later. Regular reappraisal of strategy helps management avoid complacency. Objectives and strategies should be consciously developed and coordinated and should not merely evolve out of day-to-day operating decisions.

An organization with no sense of direction and no coherent strategy precipitates its own demise. When an organization does not know where it wants to go it usually ends up some place it does want to be. Every organization needs to consciously establish and communicate clear objectives and strategies.

Behavioral, cultural and political aspects of strategy generation and selection are always important to consider and manage. Because of increased legal pressure from outside groups, boards of directors are assuming a more active role in strategy analysis and choice. This is a positive trend for organizations.

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Received for publication: 23.03.2014
Revision received: 30.09.2014
Accepted for publication: 11.10.2014

How to cite this article?

Style – **APA** *Sixth Edition:*

Djordjević, B. (2014, 07 15). Strategy analysis and choice. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 42-50. doi:10.12709/mest.02.02.02.05

Style – **Chicago** *Fifteenth Edition:*

Djordjević, Branislav. 2014. "Strategy analysis and choice." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 42-50. doi:10.12709/mest.02.02.02.05.

Style – **GOST** *Name Sort:*
Djordjević Branislav Strategy analysis and choice [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 42-50.

Style – **Harvard** *Anglia:*

Djordjević, B., 2014. Strategy analysis and choice. *MEST Journal,* 15 07, 2(2), pp. 42-50.

Style – **ISO 690** *Numerical Reference:*

Strategy analysis and choice. **Djordjević, Branislav.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 42-50.

MEST Journal
DOI 10.12709/mest.02.02.02.06

INSTITUTIONAL COOPERATION ON MIGRATION AND ASYLUM IN THE EU AND IN SLOVAKIA IN CONNECTION WITH ITS ACCESSION TO THE EU

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JEL category: **F52**

Abstract

Paper deals with current issues related to migration and integration of foreigners in the changes of globalization. It presents approaches to migration and asylum within the international community and European integration, and the resulting consequences for the Slovak Republic. First part deals with basic requirements that aliens should meet when entering the Schengen area, adopted legislation which covers aliens´ stay permit and overview of lodged requests for international protection in Slovak Republic. The second part shows the evolution of the right to asylum from historical concept to the modern way of protection in international law on basis of international conventions within the United Nations and regional development in the European Union. Third part shows the evolution of asylum policy within European Union, its institutional background and introduces the Common European Asylum System. In transparent manner characterizes major legal standards of European Union law that regulate the residence of aliens and asylum issues.

Keywords: migration, asylum, integration, residence of aliens, EU law

1 INTRODUCTION

Time of globalization has brought a distinctive interdependence of States in various bonds and at different levels. Next to States there are powerful multinational corporations at the global scene, economic and trade relations are changing. China has become the largest productive economy in the world. Globally the new engine of the global economy became countries of Asia. The economic crisis of 2008 caused by growth in financial economy has shown the dangers that we can still expect. In a globalized world, there is a

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shift that we cannot influence. Economic crisis in the past were replaced by a period of economic growth and prosperity. But this time the economy is stagnating. A new world for me is an awareness that things have definitely changed and it will be harder for everyone. We have therefore social changes, globalization, new technologies, economic problems and the fact that it all stays with us. Technological and structural changes that we are currently experiencing, reveal completely new horizons, what we have dreamed of (Bukerová, 2013), suggests Janice Caplan, known British consultant in management and organization changes. Changes, however, can be turned to opportunity by company, that is equipped technologically and with human capital enough to adapt flexibly to changing conditions.

2 RISKS ASSOCIATED WITH MIGRATION IN ECONOMICALLY DEVELOPED COUNTRIES

One of the most dramatic manifestations of international relations is a growth in a huge differentiation between developed, highly industrialized countries – the world centre and the poor developing countries (Liďak, 2009). Number of international migrants has more than doubled in the last 25 years, and another 25 million were added in the first five years of the 21st Century (Koser, 2007). Stating this numbers Koser didn´t specify numbers of irregular migrants. Only in Europe lived 6-8 million illegal migrants in 2008 (Zoubek, 2008). By definition of the UN, the migrant is a person who has more than a year lived outside his usual country of residence.

The political and media debates present irregular migration often associated with the notion of state sovereignty threats. To put it simply, the states have the sovereign right to control who crosses their borders, and by the weakening of border control, irregular migrants will threaten sovereignty. The conclusion is that stopping irregular migration is a prerequisite for confirmation of full sovereignty (Koser, 2007). Koser used instead of the term illegal migration, irregular migration, arguing that the human being as such cannot be illegal. The term illegal evokes a connection to committing crimes. Most illegal migrants, although they have violated some laws, according to him, cannot automatically be considered criminals.

Migration should be seen as a complex issue that affects the economic and social context. Model, that foreigners take our jobs is logical at first sight, and one of the frequently used arguments in political debates. But this is a simplification of the issue. Growth of unemployment even in developed Western countries is related to the globalization of the world economy, inter alia, to the above mentioned shift of the production base of the world economy to Asia. On the other hand, it should be noted that migrants often occupy positions known as 3D (dangerous, difficult and dirty) (Koser, 2007).

It is clear, that each state can accept only a certain number of immigrants, without threatening its security and cultural integrity. Of course, there is the risk of enclaves' origin, that are not integrated, that may affect the fragmentation of society subsequently. This problem we have also in Slovakia, where the members of the Roma community are allocated in certain areas. Similarly, the feeling of exclusion, felt by French citizens of Arab origin who do not have access to good education and thus to better paid employment, resulted in riots in 2005. Recent unrest among immigrants in Sweden in May 2013 set the mirror to outwards multicultural looking society. Swedes have given asylum or residence permit for citizens of third countries, but the subsequent integration of these people into society, especially in educational and work process, was not successful. The reason is simple, distrust and unwillingness of the major society to accept these migrants (Slovensky rozhlas 1, 2013).

But to not show to others, we have the same problem with the Roma population in Slovakia as well. Considering text above, it can be concluded that the issues of migration and integration needs to be addressed comprehensively and at the various social platforms as well. But as it is usual, simple explanations appeal to people more and even Angela Merkel in the debate on integration has expressed that putting effort to multiculturalism has failed in Germany. Right away came the answer from opposition claiming it was black and white thinking on immigration. There is need to upgrade skills of long-term

unemployed and to be open to the immigration of highly skilled workers (Spiegel, 2013). The Netherlands, traditionally considered as immigrant country, adopted in 2012 new legislation. The repeated unfounded asylum application will be considered a criminal offense. The applicant shall be imprisoned for four years or will have to pay a financial penalty 5000 EUR (News RTVS, 2012).

Movement of foreigners and entry to the EU countries is regulated by the Schengen law. To the Schengen Area belongs Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Greece, Iceland, Latvia, Lithuania, Luxembourg, Hungary, Malta, Germany, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Switzerland, Sweden.

In Schengen is applied free movement of persons, goods, services and capital. This means that the basic conditions of entry into the Schengen Area, so-called short-term visas, are subject to the competence of the EU. If you are not a citizen of the Slovak Republic, you need to enter in Slovakia a Schengen visa. Issuing of these visas is governed by Council Regulation (EC) No. 810/2009. Uniform Schengen visa allows the holder to enter the territory of each Schengen Member State for purpose of visiting friends and relatives, tourism etc. Visas may be issued for a single entry or multiple entries. Length of the alien's stay in the Schengen area must not exceed 90 days in six months from the date of first entry into the Schengen area, while the visa is not for employment, business or a similar gainful activity. There are three kinds of visa, long-term, if intended stay in a Member State is for more than three months, or short length, when stay does not exceed three months, and transit.

Third-country national may reside in Slovakia:

- with granted valid visa or under a visa free travel or with valid residence permit issued by another EU Member State,
- with granted temporary residence,
- with granted permanent residence,
- with granted tolerated stay.

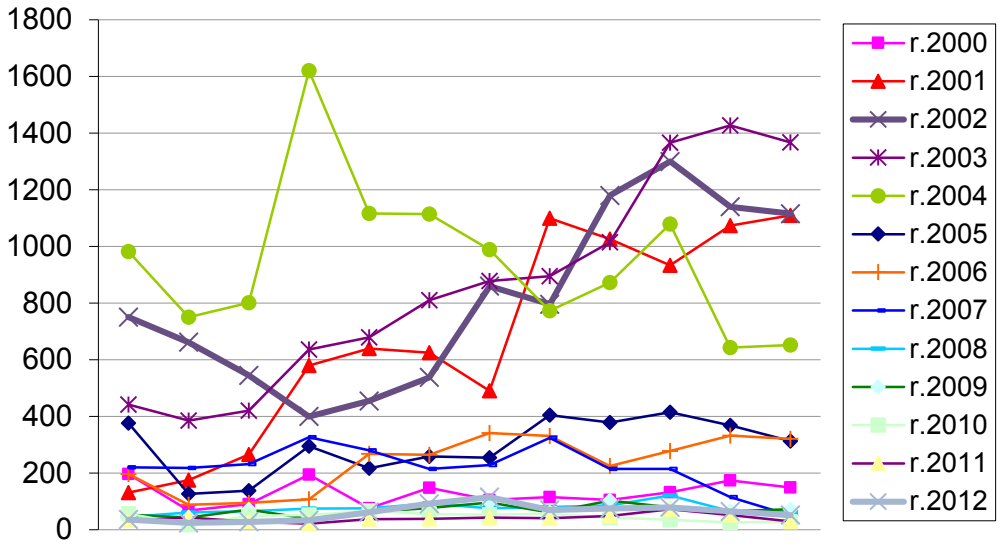
The Application for long-stay visa or for some kind of residence should be lodged in Slovak territory according to relevant provisions of the Act no. 404/2011 Coll. on Residence of Aliens and on amending and supplementing some laws from the 21 October 2011 (further "the Act on Residence of Aliens"). The Act on Residence of Aliens sets out the conditions of aliens' entry into the territory of the Slovak Republic, their return to their country of origin through deportation, provides assisted voluntary returns and has control and sanction mechanisms to prevent illegal conduct and violations of obligations. Whereas frequent reason for illegal migration is to gain employment in the destination country, for aliens are relevant provisions of laws, enabling them to enter the labour market. In Slovakia, it's the law no. 5/2004 Coll. on employment services and on amending and supplementing certain acts, which sets out the obligations of public authorities to detect illegal work and illegal employment. General prohibition of illegal labour is determined by Law no. 82/2005 Coll. of undeclared work and illegal employment and on amendments to certain laws. Penalties for illegal employment are regulated by law no.125/2006 Coll. Labour Inspection Act and on amendments to certain laws.

Although asylum law is only one part of the overall migration policy that deals with granting of other kinds of residence permits, many illegal migrants pass just over the asylum procedure, which is the last chance for them to legalize their stay. EU asylum policy is in this regard really generous. Once a person has applied for asylum, he enters into asylum procedure and the reasons for the request must be evaluated under the law. During this time the states provide food and accommodation. Aliens also have the right to basic health care, in Slovakia provided under the Law no. 576/2004 Coll. of health care and on health care services and on supplying and amending some laws.

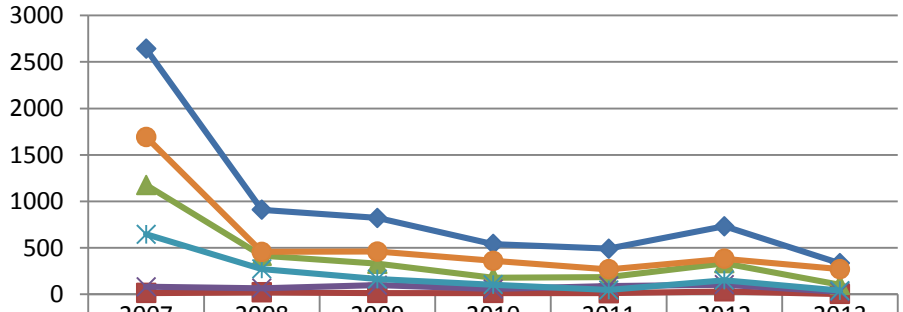
On purpose are submitting an application for asylum in particular foreigners, who failed to get another form of residence permit and try thus to avoid deportation from the country. Asylum system is being abused by migrant smugglers, who know that when they leave people in any EU country, there will be taken care of them in a way.

A-Applicants, GA- granted asylum, NGA-not granting asylum, SP-granted subsidiary protection, NGSP-not granting subsidiary protection, Ceased asylum procedure.

Reading Graphs 1 and 2 we see decrease in number of requests for international protection in SR from year 2007. This is due, first, to relatively high rate of negative decisions in the field of subsidiary protection, second, migrants tend to prefer western Europe countries because there are communities of their people, from that they can get support, not mentioning better economic opportunities.



Graph 1 Seekers for International protection in SR 2000-2012



	2007	2008	2009	2010	2011	2012	2013
A	2642	909	822	541	491	732	334
GA	14	22	14	15	12	32	4
NGA	1177	416	330	180	186	334	103
SP	82	66	98	57	91	104	28
NGSP	646	273	165	104	48	153	40
ceased	1693	457	460	361	270	383	271

Graph 2 Seekers for International protection in Slovakia 2007-2013

On the one hand, the EU fights against illegal migration, on the other hand its generously conceived asylum system encourages illegal migration. Therefore votes calling for revision of generous asylum system are on the rise. In Slovakia are the questions of international protection provided by the Law no. 480/2002 Coll. on Asylum and on amending certain acts in accordance with the international commitments of the Slovak Republic, the Slovak Constitution and EU legislation on asylum. Let us ask therefore, what the right on asylum is and how it is applied.

3 LEGAL ASPECTS ON ASYLUM POLICY

The right of asylum or right to asylum is an ancient legal concept. From originally religious asylum, which in the Middle Ages provided by the Church to offender of ordinary crimes that - saved from worldly persecution - offenders underwent penance , developed political asylum in 16 Centur**y,** when Europe's religiously motivated wars of the Reformation period created necessary social conditions for its stability. Just because of this institute were many believers of both irreconcilable sides protected from mass massacre (David, Sladky, & Zboril, 2005). As the monarch decided in the past to provide to an alien refuge (asylum), it was a manifestation of sovereignty and he always considered the political consequences of such an act. However, often there were grounds for denial of asylum in general, political asylum as well. Britain's refusal of Napoleon's demand to expel his political opponents from the country, and failed claim of Austria and Russia on the extradition of five thousand political refugees addressed 1849 to Turkey (supported by England), finally stabilized asylum to protection of political offenders (David, Sladky, & Zboril, 2005).

The Oxford Dictionary of Law under asylum understands refuge granted to an individual whose extradition is sought by a foreign government or who is fleeing persecution in his native state. It is either given refuge in the territory of a foreign country (territorial asylum) or a foreign embassy (diplomatic asylum). The latter is quite contentious, as it is a derogation from the sovereignty of the territorial state (Law & Martin, 2009).

First, the right to asylum appeared in international public law in Art. 14 of the Universal Declaration of Human Rights adopted in 1948, according to which "everyone has the right to seek and enjoy in other countries asylum from persecution." This right does not apply in case of prosecutions brought against person under serious non-political crimes or on the basis that offences are contrary to the purposes and principles of the United Nations. Right of territorial asylum was further introduced in UN General Assembly Resolution from 1967 (DOCUMENTS A/RES/2312/XXII). According to this declaration, the right of asylum cannot invoke a person who is reasonably suspected of having committed a crime against peace, a war crime or crime against humanity (Article 1). States that granted asylum may not afford refugee to do an activity that is contrary to the purposes and principles of the United Nations (Article 4) (David, Sladky, & Zboril, 2005). United Nations Conference on Territorial Asylum was held in Geneva from January 10th to February 4th1977. The States had been able to agree on the wording of five articles of the Convention regarding non-refoulement of asylum seekers and their basic obligations in the country of asylum, however reluctant to adopt the final approval of the text of the Convention. States thus confirmed its unwillingness to restrict the freedom in granting territorial asylum and confirmed the aspiration to keep this affair under its national law, policy and practice (Jankuv, 2006). Up to date there was not adopted an international convention that would institute territorial asylum enshrined in international law. This role largely substitutes Geneva Convention relating to the Status of Refugees adopted by the UN in 1951, as modified by the Protocol of 1967 (Šturma, 2003).

As regional specificity should be noted that the Organization of American States, which was founded in 1948, had adopted in 1954 the Convention on Diplomatic Asylum and the Convention on Territorial Asylum. The contractual arrangements concerns the asylum and granting asylum mainly for political reasons and forms the basis of refugee law in South America (Jankuv, 2006). We also should mention the Cartagena Declaration, which is the result of the conference of government representatives and major Latin American lawyers held in 1984 at Cartagena, Colombia. The Declaration recommends that the refugee definition used in this area includes the definition contained in the Geneva Convention of 1951 and covers also the people who have fled their country because their lives, safety or freedom have been threatened by generalized violence, foreign aggression, internal conflicts, massive violation of human rights or other circumstances which have seriously disturbed public order (UNHCR, 2011). Although the Declaration is not legally binding, most Latin American countries apply this definition in practice.

In the international context is the corner stone of refugee law the Geneva Convention relating to the Status of Refugees of 1951 (hereinafter "the Convention") modified by New York Protocol of 28 July 1967 (Šturma, 2003). Geneva Convention entered into force on 22 April 1954 and Protocol on 4 October 1967. As a legal category refugees emerged in the early 20th Century. In the period between the world wars considerable number of refugees, 635 000 Russian, 55,000 German Jews, 210 Spanish, brought the League of Nations to give them legal status and facilitate their settling in the country of adoption (Berthotyova, 2008).

International meaning of the Geneva Convention and New York Protocol of 1967 from legal point of view is based mainly on the definition of who is and is not a refugee, stipulates the principle of non - refoulement and the creation of the legal status of refugees, their rights and obligations in the country, where them were granted refugee status. These documents contain substantive refugee law, what conditions shall be met to grant refugee status and obligation of States to review the application for refugee status. Procedural rules are adopted under national legislation. This means that each state proceeded on the basis of its national law. Originally Geneva Convention should apply to any who owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; due to events occurring before 1 January 1951 in Europe and elsewhere (UNHCR, 2011). As given by the Article 1 B, for the purposes of this Convention, the words "events occurring before 1 January 1951" in article 1, section A, shall be understood to mean either (a) "events occurring in Europe before 1 January 1951"; or (b) "events occurring in Europe or elsewhere before 1 January 1951"; and each Contracting State shall make a declaration at the time of signature, ratification or accession, specifying which of these meanings it applies for the purpose of its obligations under this Convention. Geographical limitation under Art.1 B (1) a) of the Convention used the Congo, Madagascar, Monaco and Turkey. All other Member States shall recognize the validity of the Convention without any territorial limitation (UNHCR, States Parties to the Convention 1951 relating to status of refugees and the 1967 Protocol as of 1 April 2011, 2011). Protocol 1967 relating to the Status of Refugees removed the time restriction of the Geneva Convention, which originally applied only to events before 1 January 1951.

Change of social climate in Central and Eastern Europe has caused that Czechoslovakia, which was traditionally a country of emigration, has become a transit country for migrants on their way to Western Europe. Response to this situation was that the Federal Assembly of the Czech and Slovak Federative Republic adopted on 16 November 1990 the Act No. 498/1990 Coll. on refugees. Year later, 26 November 1991, acceded Czech and Slovak Federal Republic to the Geneva Convention and New York Protocol. Documents of the accession of the Czech and Slovak Federative Republic on these treaties were deposited with the Secretary-General of the United Nations, the depositary of the Geneva Convention of 26 November 1991. For the Czech and Slovak Federal Republic Geneva Convention entered into force on 24 February 1992 pursuant to Article 43 paragraph 2 and the New York Protocol in accordance with its Article VIII, paragraph 2 on 26 November 1991.

The right to asylum is included in the catalogue of fundamental rights contained in the Charter of Fundamental Rights and Freedoms, which was put into law through constitutional Act of the Federal Assembly of Czechoslovakia no. 23/1991 Coll. Its adoption was given the right to asylum constitutional framework and later catalogue of fundamental rights of the Charter of Fundamental Rights was incorporated into the second head of the Constitution of SR. Article 53 of the Constitution (alike Article 43 of the Charter of Fundamental Rights and Freedoms) provides that "the Slovak Republic grants asylum to foreigners persecuted for exercising political rights and freedoms. Asylum may be denied to those who acted in violation of fundamental human rights and freedoms. The law sets details."

The existence of territorial asylum in Public International Law we can derive from the customary international law, from the Art. 4 of the Universal Declaration of Human Rights, the text of legally not-binding UN Declaration on Territorial

Asylum of 1967 and not ratified text of the UN Convention on Territorial Asylum of 1977. The right to grant asylum is unquestionable states' privilege which is of international- legal point of view accepted. The Institute of asylum provides stronger legal regime than refugee status – to asylum beneficiaries are generally applied national legal regime, unlike to refugees who are granted rights of aliens under different regimes. Just because a stronger legal title of asylum European countries mostly included refugee issues under its asylum law (David, Sladky, & Zboril, 2005).

This approach applied the Council of Europe and later EU, when covering refugee topic with asylum law, causing merging of the right to asylum and refugee law in the EU. This is also clear from the text of the Convention determining the State responsible for examining an asylum application lodged in one of the Member States of the European Communities (1990), signed in Dublin, Ireland (hereinafter referred to as "the Dublin Convention"). Article 1 b) of the Dublin Convention sets that for the purpose of the Convention an asylum application regards a request lodged by an alien in a Contracting State seeking protection under Art 1 of the Geneva Convention as amended by the New York Protocol.

4 MIGRATION POLICY AND ASYLUM SYSTEM IN THE EU

First discussions on asylum at the level of the European Communities and in informal way, took place in the context of the Single European Act (1986) and the creation of an area of free movement of persons, goods, services and capital in the Member States of the European Community. Until 1999 contractual or other legislation considering the asylum were not part of Community law, which is based on the principle of primacy and on the axiom of its direct application in the Member States. Until 1 November 1993, when entered into force EU Treaty (1992), existed in this area binding conventions having nature of conventions of international public law, as well as several non-binding resolutions and decisions of the Ministers of Interior of EC (Jankuv, 2006). That was the case abovementioned Dublin Convention. EU Treaty of 1992 incorporated the issue of asylum in the EU third pillar, under cooperation in the field of justice and home affairs. The Amsterdam Treaty, which entered into force in 1998, included the Asylum to the first pillar of the EU. This indicated the preparation of common regulation of the asylum systems in the EU countries at the level of Community law. Working on establishing a Common European Asylum System (CEAS) started immediately after Amsterdam Treaty´s entering into force in May 1999, based on the guidelines adopted by the European Council meeting in Tampere on 15th-16th October 1999. The program focused on coordination of migration policies in the EU countries as well. Aim during the first phase of the CEAS (1999-2005) was to harmonize Member States' legal frameworks on the basis of common minimum standards. This regarded the four basic directive: No. 2001/55/EC on minimum standards for giving temporary protection in the event of a mass influx of displaced persons and on measures promoting a balance of efforts between Member States in receiving such persons and bearing the consequences thereof, No. 2003/9/EC laying down minimum standards for the reception of asylum seekers, No. 2004/83/EC on minimum standards for the qualification and status of third country nationals or stateless persons as refugees or as persons who otherwise need international protection and the content of the protection granted so called Qualification Directive, No. 2005/85/EC on minimum standards on procedures in Member States for granting and withdrawing refugee status so called Procedural Directive.

Furthermore, it was the adoption of the Dublin Regulation (No. 2003/343/EC), including its implementing Regulation (No 2003/1560/EC). The Dublin Regulation is known in Union texts as Dublin II. The objectives of the Tampere were replaced and developed by the Hague Programme of 2004. The goals of the second phase of the CEAS, set out in the Hague Programme, comprised the establishment of a common asylum procedure and a uniform status for those whom have been granted asylum or subsidiary protection, as well as strengthening practical cooperation between national asylum authorities. Now is in force Stockholm Programme of December 2009, which builds on previous programs and provides a framework and sets principles for on-going development of European

policies on justice and home affairs for the period 2010 to 2014. In the year 2013 were adopted following legal acts of EU in the field of asylum that replace abovementioned standards:

- Directive 2013/32/EU of the European Parliament and of the Council of 26 June 2013 on common procedures for granting and withdrawing international protection,
- Directive 2013/33/EU of the European Parliament and of the Council of 26 June 2013 laying down standards for the reception of applicants for international protection
- Regulation (EU) No 604/2013 of the European Parliament and of the Council of 26 June 2013 establishing the criteria and mechanisms for determining the Member State responsible for examining an application for international protection lodged in one of the Member States by a third-country national or a stateless person,
- Regulation (EU) No 603/2013 of the European Parliament and of the Council of 26 June 2013 on the establishment of "Eurodac" for the comparison of fingerprints for the effective application of Regulation (EU) No. 604/2013

Common legislation should be sustained by the common country of origin information, which will be provided by the European Asylum Support Office, established in 2010.

Illegal migration is along the asylum comprised in Title IV of the Treaty of Lisbon called Area of freedom, security and justice .At The European Commission is for immigration policy responsible Directorate-General for Home Affairs. Some of the most important legal texts adopted in the field of migration and movement of persons include:

- Directive 2003/86/EC on the right to family reunification,
- Directive 2003/109/EC concerning the status of third- country nationals who are long-term residents,
- Directive 2004/38/EC on the right of citizens of the Union and their family members to
- move and reside freely within the territory of the Member States
- Directive 2004/114/EC on the conditions of admission of students ,
- Directive 2005/71/EC relating to facilitating the admission of researchers into the EU ,
- Directive 2008/115/EC concerning the return of third-country nationals who are illegally present in the Member States ,
- Directive 2009/50/EC on the admission of highly skilled migrants, so-called blue card directive.

5 INSTITUTIONAL COOPERATION IN MIGRATION AND ASYLUM IN EU

When it comes to matters of asylum and resettlement, the EU plays an important role within Europe and beyond. Law and EU policies have a significant impact on the creation of mechanisms for the protection of refugees in many other countries. EU institutions such as the European Council, European Commission, European Parliament and European Court of Justice have legislative, executive and judicial powers. The common legislation have been adopted. Despite directives and regulations which seek to harmonize asylum throughout the EU, there are still big differences between Member States in terms of access to protection, opportunities and number of granted asylums, as well as in the reception conditions. New legislation that was introduced in the third part of this article, have to be followed with common approach at nation level. Implementing and enforcing the EU legislation by national authorities remains a major challenge in the future.

EU migration policy is not formed only by laws on entry and stay of foreigners in the territory of the Member States, but it also includes actions to integrate foreigners into society , equal opportunities in the labour market , in housing, education , employment training and in culture as well. It also covers policy of nation states towards national and ethnic minorities. Important role are playing in this regard NGOs, like International Organisation for Migration, which plays irreplaceable role by assisted voluntary returns to the country of origin. The European Union continues building single European asylum system and operates on a balanced and comprehensive EU immigration policy, in order to take advantage of opportunities that may bring legal migration to European economy and society. It should take into account the needs of the labour market in the EU countries and minimize brain drain from countries outside the EU

simultaneously. At the same time it is necessary to establish strong integration policies that guarantee the rights of migrants. Common migration policy must also include effective and sustainable return policy, and must deal with the problems associated with illegal migration and to protect its citizens against international crime in order to live and work in safety.

6 CONCLUSION

Migration has contributed significantly to the current form of modern Europe, concerning the society as a whole, it continues to play its role. The phenomenon of migration is primarily associated with the development, on the other hand, it is also a source of worry and fear, especially for citizens of developed countries. Foreign Migration is currently an important feature of globalization and one of the major challenges of the 21st century. People coming from different cultures always affect the host community and vice versa. Interaction is an extremely complex process, reaching in different cases different degrees. A cultural influence is often observable only with the passage of years. Disruption of cultural homogeneity, whatever is meant by it, may not be necessarily a negative process, on the contrary it may mean enrichment (Kabeleova, 2013). It is therefore important to address the issues of migration and integration in the wide societal discussion, considering the benefits and risks and to work on the vision of a sustainable migration policy that will benefit us all.

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Received for publication: 22.01.2014
Revision received: 22.05.2014
Accepted for publication: 23.06.2014

How to cite this article?

Style – **APA** *Sixth Edition:*

Filip, S., Machovič, P., & Kollar, V. (2014, 07 15). Institutional cooperation on migration and asylum in the EU and in Slovakia in connection with its accession to the EU. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 51-60. doi:10.12709/mest.02.02.02.06

Style – **Chicago** *Fifteenth Edition:*

Filip, Stanislav, Peter Machovič, and Vojtech Kollar. 2014. "Institutional cooperation on migration and asylum in the EU and in Slovakia in connection with its accession to the EU." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 51-60. doi:10.12709/mest.02.02.02.06.

Style – **GOST** *Name Sort:*

Filip Stanislav, Machovič Peter and Kollar Vojtech Institutional cooperation on migration and asylum in the EU and in Slovakia in connection with its accession to the EU [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 51-60.

Style – **Harvard** *Anglia:*

Filip, S., Machovič, P. & Kollar, V., 2014. Institutional cooperation on migration and asylum in the EU and in Slovakia in connection with its accession to the EU. *MEST Journal,* 15 07, 2(2), pp. 51-60.

Style – **ISO 690** *Numerical Reference:*

Institutional cooperation on migration and asylum in the EU and in Slovakia in connection with its accession to the EU. **Filip, Stanislav, Machovič, Peter and Kollar, Vojtech.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 51-60.

MEST Journal
DOI 10.12709/mest.02.02.02.07

EVALUATION OF THE ENVIRONMENTAL INFLUENCE OF TRANSPORT

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JEL category: **O13, O18, R41**

Abstract

The sustainable development of transport is among the priorities of the general EC transport policy. The transport sector generates a considerable part of the negative effects. The unveiling of opportunities for decreasing the negative external effects of the transport sector requires evaluation and comparative analysis. The paper presents quantitative and cost evaluation of the noxious emissions of transport, as well as a comparative analysis of the environmental influence of road and railway transport. The evaluation is based on official statistical information sources for energy consumption, ozone precursors' emissions, fine dust particles, and the emissions of greenhouse gasses. The comparative analysis enhances the main streams and directions of road and railway carriages in the Republic of Bulgaria by indicators of the harmful influence. The evaluation and analysis results prove that the development of railway transport should take a priority place and should be a strategic goal of the national transport policy for the next program period 2014-2020.

Keywords: *Transport, transport policy, sustainable development, environment, external effects.*

1 OBJECTIVES

The climate change, air and water pollution, energy consumption, destruction of the ozone layer and ecosystems are among the most significant environmental problematic issues (Dadalos, n.d.). Undoubtedly, transport has a significant negative impact and contribution to these problematic issues.

Quantitative and comparative evaluation of the negative impact of transport on the environment are a solid platform for the creation of opportunities for its reduction. That tendency provides the possibility to outline the strategic objectives for sustainable development and achievement of economic efficiency in the transport sector, as well as to measure the results from their efficiency in the sector.

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The harmful substances emissions value assessment is necessary to determine the economic costs and benefits to society and to evaluate and compare projects and strategies in the transport sector.

The specific objectives of the analysis are, as follows:

- to determine the relative level and dynamics of the environmental impact in the transport sector of Bulgaria;
- to determine the proportion of the transport sector for each of the major environmental issues;
- to make a comparative assessment of significant and global effects, such as the particulate matter emissions, and thegreenhouse gases with the EU average values.
- to compare in terms of quantity and value the environmental impact of the passenger rail and passenger cars transport on the main directions in Bulgaria.

Table 1. Assessment indicators

1.Energy consumption	
Impact	Description
Impact on the environment and human health through the emission of harmful substances and greenhouse gases	Fuel and energy consumption in transport, calculated as thousands of tons of oil equivalent (thousand t, 1000 toe)
2. Emissions of ozone precursors	
Impact	Description
A strong oxidant, adverse effects of ground-level ozone on human health (respiratory system, pulmonary diseases, asthma) and ecosystems.	Precursors of ozone, nitrogen dioxide, carbon monoxide and non-methane volatile organic compounds. The potential for the formation of tropospheric ozone using NMVOC equivalents: NMVOC = 1; NOx = 1.22; CO = 0.11 and CH_4 = 0,014.
3. Precursor emissions of PM10	
Impact	Description
Impact on human health (respiratory diseases, respiratory infections of the upper respiratory tract, bronchitis). The harmful effect is more pronounced at the same time the presence of sulphur dioxide in ambient air.	The dust is a major atmospheric pollutant of the air. Dust particles are emitted directly into the atmosphere (primary emission) or form of the gas into the atmosphere-precursors of those particles (secondary emissions). Sulphur dioxide, nitrogen oxides and ammonia are inorganic gaseous substances, the precursors to fine particulate matter. The potential for formation of aerosols of the main atmospheric pollutants is as follows: NOx = 0,88; SO_2 = 0.54 and NH_3 = 0,64.
4. Greenhouse gases	
Impact	Description
Impact on the climate change (global warming)	According to the UN Framework Convention on climate change the main greenhouse gases are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hidrofluorokarboni (HFCs), perfluorokarboni (PFCs) and sulphur hexafluoride (SF_6). Different greenhouse gases have different global warming potential (GWP). The impact is compared with the impact of CO_2 (GWP = 1) and identified as CO_2 equivalent.

2 METHODOLOGY

The methodology includes:

- selection of evaluation indicators for the impact of the economic sectors on the environment;
- quantitative assessment of the environmental impact of selected indicators;
- a comparative assessment of the transport sector impact in relation to the impact of other sectors;
- a comparative assessment of the impact on the transport modes;
- determination of the strategies of change of the indicators values and their structure in the sectors of transport.

2.1 Indicators

The main emissions of harmful substances from the transport sector are: sulphur oxides (SO_x), nitrogen oxides (NO_x), non-methane volatile organic compounds (NMVOC), ammonia (NH_3), carbon monoxide (CO), heavy metals (mercury-Hg, cadmium-Cd, lead-Pb) polycyclic aromatic hydrocarbons (PAHs), dioxins and furans (DIOX) particulate matter (PM). Their negative impact on the environment and human health is measured by four major assessmen indicators which are specified in the Table 1 (Ifeu, 2010). Four key indicators are used for comparative evaluation between rail and road transport, taking into account the emissions from the transport sector with the most significant negative effect on the environment:

- CO_2 Emission of carbon dioxide
- NOx Emission of nitrogen oxides
- NMHC Emission of hydrocarbons
- PM Emission of particulate matter

These indicators take into account the most significant negative effects on the environment - the greenhouse effect, soil and water acidification, eutrophication and eco-toxicity, human toxicity and smog formation.

2.2 Impact assessment

The evaluation of energy consumption includes the level, dynamics and structure of the final energy consumption per sector and transport mode. The final energy consumption in transport includes the consumption by rail, road (incl. households), air and inland waterway transport. Quantification is in thousands of tonnes of oil equivalent (thousand tones)

Examinations of the emission of greenhouse gases, the ozone precursor and the PM10 are done in three aspects - emissions from the transpot sector, share of the transport sector emissions in the national emissions and share of the road transport emissions in the emissions from the transport sector.

The potential of tropospheric ozone formation using NMVOC equivalents:

- NMVOC = 1;
- NOx = 1.22;
- CO = 0.11, and
- CH4 = 0,014. (Ministerstvo na okolnata sreda i vodite, 2013, p. 5)

The potential of aerosols formation of the main atmospheric pollutants is as follows:

- NOx = 0,88;
- SO2 = 0.54, and
- NH3 = 0,64. (Ministerstvo na okolnata sreda i vodite, 2013, p. 8)

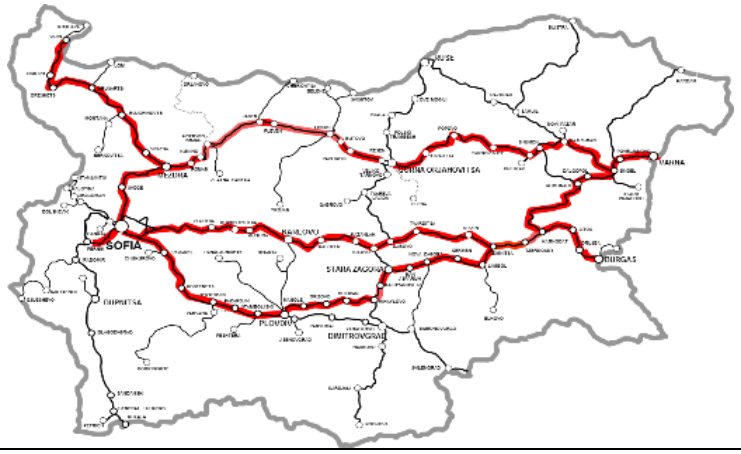
The impact is compared with the CO_2 (GWP = 1) impact and is identified as CO_2 equivalent (CO_2-eq).

Comparative analysis between rail and road transport covers five main areas (Figure 1) and 11 points of origin and destination of passenger flows or a total of 121 relationships from the transport network of Bulgaria.

Detailed origin/destination matrices have been developed for the included in the study relations with quantitative and value estimates of the emissions. The model "EcoPassanger" (Ifeu, 2010) is used for quantitative assessments of the harmful substances emissions. Official data sources for 2011 and personal calculations of authors on rail and road tripss have been used for the model. The calculations for road transport are made for vehicles with diesel engine, mid-range (1,4-2,0 l.), emission standard Euro 3 and 1.5 passenger load per car.

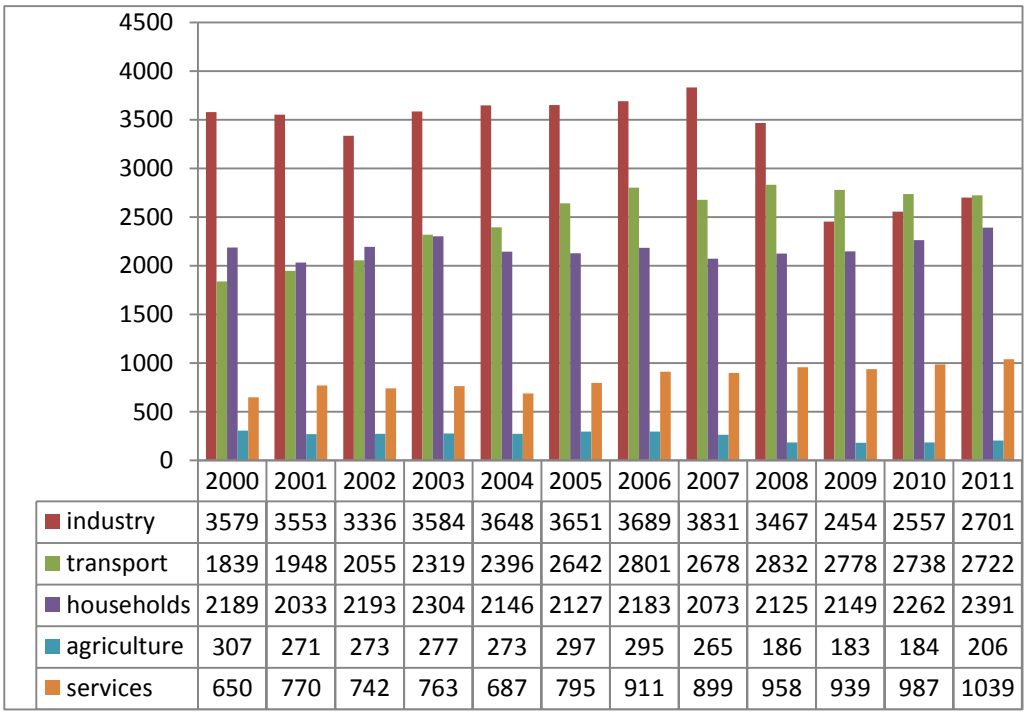
The energy consumption for 1 passenger-kilometer in the model is defined on the basis of average weighted values for the specific energy consumption and the average for the country specific load factors per categories of trains.

The value assessments are made on the basis of reference unit prices for these indicators recommended in the Requirements for preparation of CBA (Cost benefit analysis) in Transport sector (CBA Guidelines, 2008) which have been brought to 2011 by indices of GDP (gross domestic product) and PPP (purchasing power parity) for Bulgaria and the data on the number of trips by personal vehicles and train.



Sofia – Karlovo – Burgas
Sofia – Plovdiv – Stara Zagora – Burgas
Sofia – Svoge – Mezdra – Gorna Orjahovitsa – Varna
Sofia – Pernik
Sofia – Svoge – Mezdra – Vidin

Fig. 1 Main areas and points of origin and destination of passenger flows



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
industry	3579	3553	3336	3584	3648	3651	3689	3831	3467	2454	2557	2701
transport	1839	1948	2055	2319	2396	2642	2801	2678	2832	2778	2738	2722
households	2189	2033	2193	2304	2146	2127	2183	2073	2125	2149	2262	2391
agriculture	307	271	273	277	273	297	295	265	186	183	184	206
services	650	770	742	763	687	795	911	899	958	939	987	1039

Fig. 2 Energy consumption by sectors (1000 toe) (data source (NSI, 2013))

The model takes into account the main externalities (impact over the environment) associated with the use of the means of transportation and the production of fuels and electricity. The model does not include the effects

of the production and maintenance of vehicles and the construction and maintenance of transport infrastructure. Also, the model does not include the additional resource consumption (heating, lighting, etc.) and the effects on land use, noise and depletion of the ozone layer. The greenhouse gas methane is not included also because emissions of carbon dioxide and nitrous oxide are dominant in the transport sector (Ifeu, 2010).

3 RESULTS AND AND FINDINGS

The study and conclusions contained in it are for the period 2000-2011, based on official statistics.

3.1 Energy consumption

Data on energy consumption by sector is shown in Figures 2 and 3.

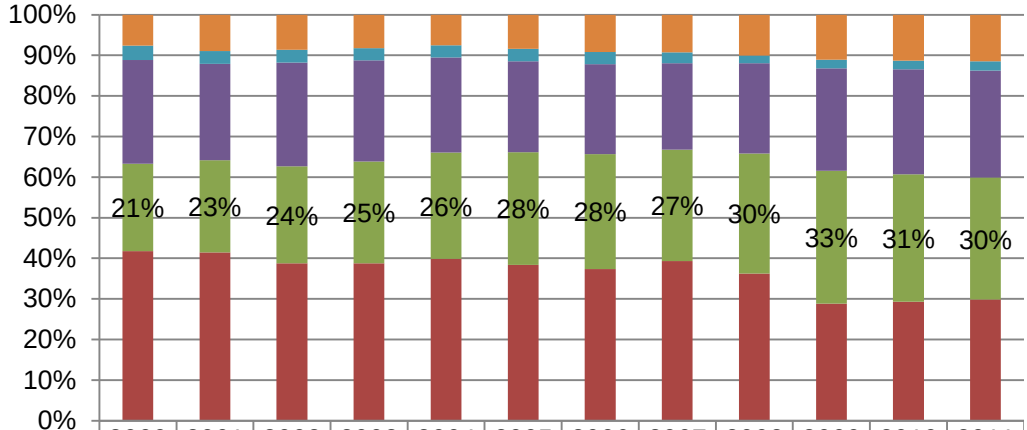
Conclusions on energy consumption by sector:

- The final energy consumption in 2011, as compared to 2000, increased by 5.8%, while the increase in transport was 48,0% and in services - 59.8%.
- The consumption of energy in transport (24,59%) accounts for the largest share, followed by that in industry (24.40%) and households (21.60%) in the structure of final energy consumption for 2011
- A temporary period of decrease of energy consumption was observed in 2007, probably due to the increase of the excise tax in the price of petroleum products.
- The relative share of transport and energy consumption increased from 17.41% to 24,59% for the period 2000-2011.
- The transport share in the final energy consumption of the country was 24,59% during 2011.

The level, dynamics and structure of energy consumption in transport per transport modes are presented in Figures 4 and 5.

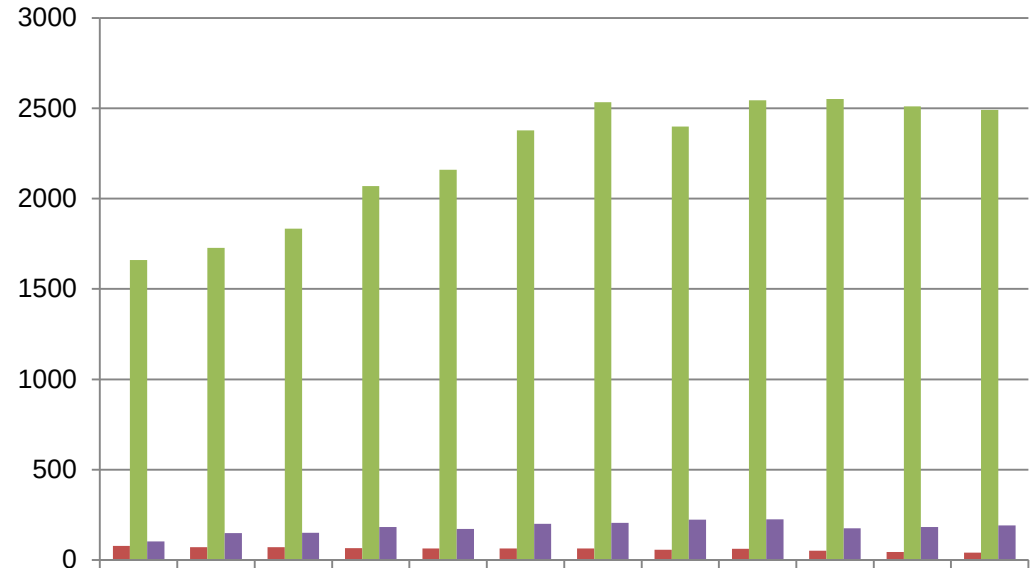
Conclusions on energy consumption by transport mode:

- There is a tendency of decrease of the total energy consumption of the sector and the levels go slowly down after 2006.
- The road transport has the largest share in the energy consumption of the sector for the entire period from 2000 to 2011 and it varies between 88.7% to 91.8%. At the same time. there is an increase of the use of the energy from road transport.
- The relative share of rail transport for the same period is within the range from 4.19% in 2000 upto 1.47 % in 2011 with a pronounced downtrend, as the main reason to that could be attributed to exist the reduction of rail traffic.



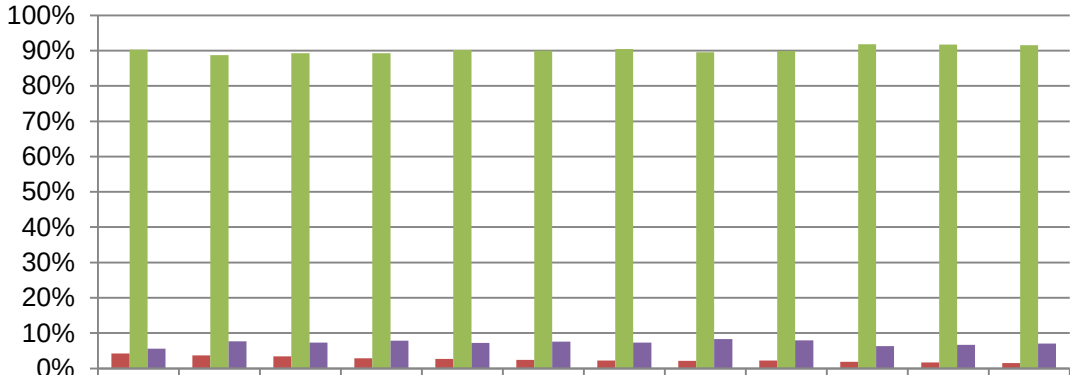
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
services	8%	9%	9%	8%	8%	8%	9%	9%	10%	11%	11%	11%
agriculture	4%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%
households	26%	24%	26%	25%	23%	22%	22%	21%	22%	25%	26%	26%
transport	21%	23%	24%	25%	26%	28%	28%	27%	30%	33%	31%	30%
industry	42%	41%	39%	39%	40%	38%	37%	39%	36%	29%	29%	30%

Fig. 3 Share of energy consumption by sectors (%)(data source: (NSI, 2013))



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Railway	77	71	70	66	64	64	63	57	62	51	45	40
Road	1660	1728	1834	2070	2160	2377	2533	2399	2545	2551	2510	2491
Air	102	149	151	183	172	200	205	223	225	176	183	191

Fig. 4 Energy consumption by transport modes (1000 toe)
(data source: (NSI, 2013)*)*



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Railway	4%	4%	3%	3%	3%	2%	2%	2%	2%	2%	2%	1%
Road	90%	89%	89%	89%	90%	90%	90%	90%	90%	92%	92%	92%
Air	6%	8%	7%	8%	7%	8%	7%	8%	8%	6%	7%	7%

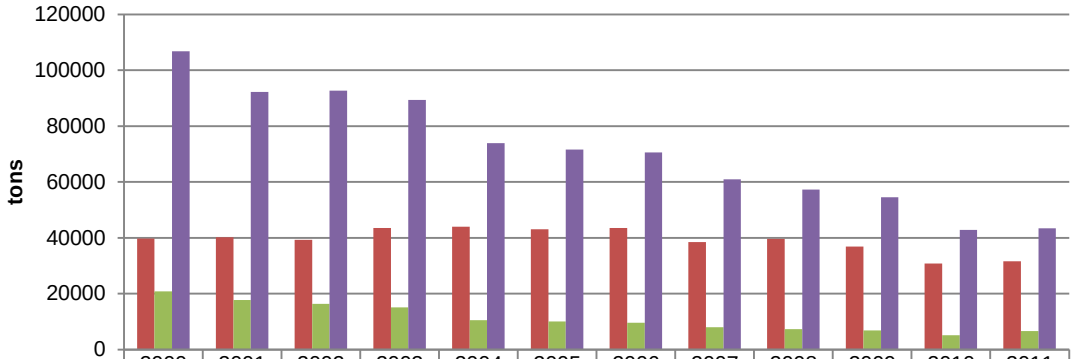
Fig. 5 Share of energy consumption by transport modes (%)
(data source: NSI,2013)

3.2 Emissions of ozone precursors

The main ozone precursors in the transport sector are nitrogen oxides (NOx), carbon monoxide (CO) and non-methane volatile organic compounds (NMVOC).

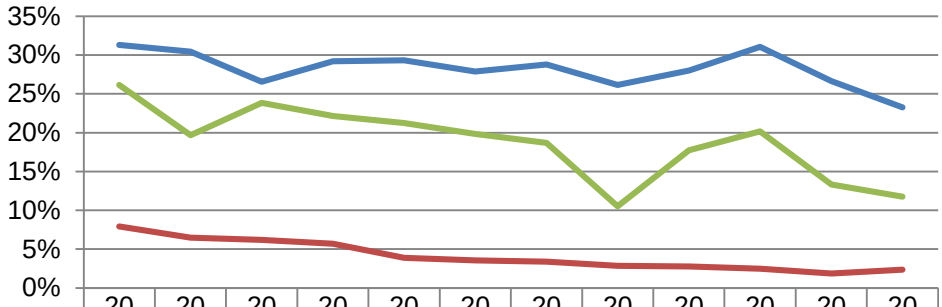
Agregate evaluation of the total emissions of ozone precursors is done by reducing the values of emissions of the different pollutants to the equivalent of NMVOC, which value is assumed to be unit.

Data regarding emissions are presented in figures 6, 7 and 8.



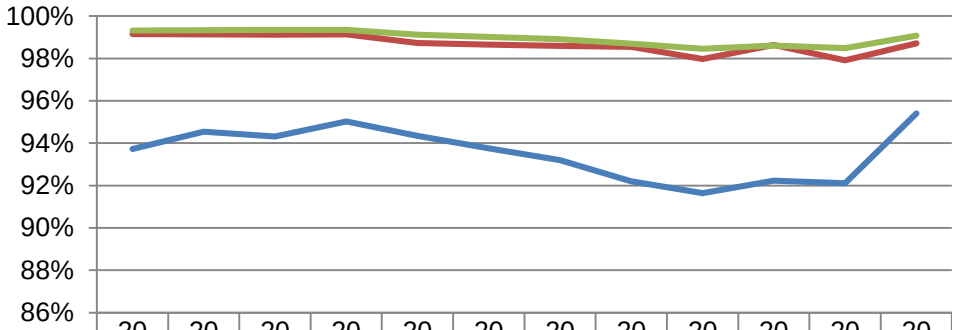
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Nitrogen oxides	39725	40199	39331	43588	43998	43026	43517	38505	39639	36874	30834	31665
Non methane volatile organic compounds	20812	17786	16394	15102	10547	10046	9592	8045	7364	6846	5165	6594
Carbon monoxide	106789	92238	92702	89402	73939	71566	70615	61001	57291	54576	42860	43464

Fig. 6 Emissions of ozone precursors of transport (data source: (NSI, 2013))



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Nitrogen oxides	31%	30%	27%	29%	29%	28%	29%	26%	28%	31%	27%	23%
Non methane volatile organic compounds	8%	6%	6%	6%	4%	4%	3%	3%	3%	2%	2%	2%
Carbon monoxide	26%	20%	24%	22%	21%	20%	19%	11%	18%	20%	13%	12%

Fig. 7 Share of emissions of ozone precursors of transport by nacional emissions (data source: (NSI, 2013))

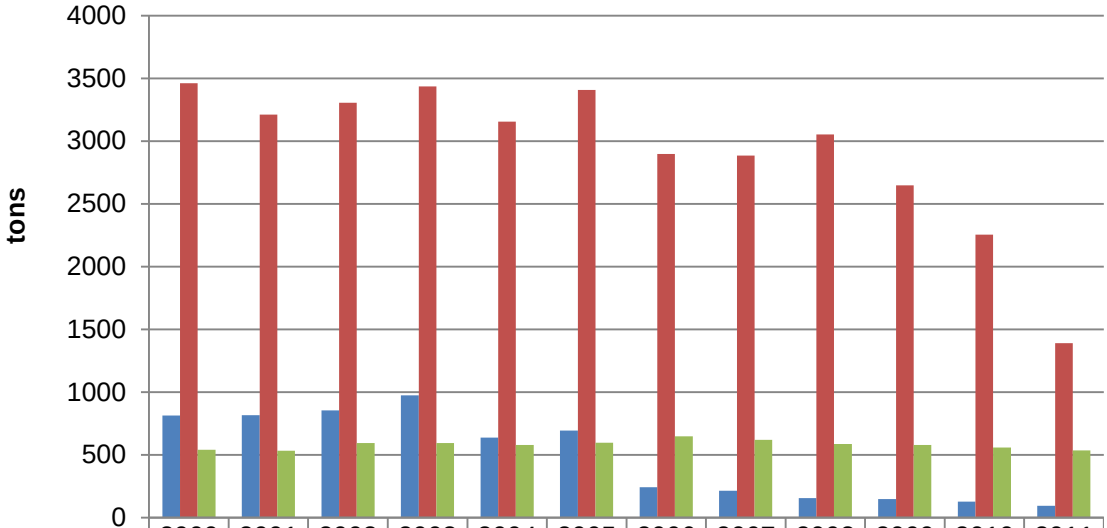


	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Nitrogen oxides	94%	95%	94%	95%	94%	94%	93%	92%	92%	92%	92%	95%
Non methane volatile organic compounds	99%	99%	99%	99%	99%	99%	99%	99%	98%	99%	98%	99%
Carbon monoxide	99%	99%	99%	99%	99%	99%	99%	99%	98%	99%	98%	99%

Fig. 8 Share of emissions of ozone precursors of road transport by transport modes (data source: (NSI, 2013))

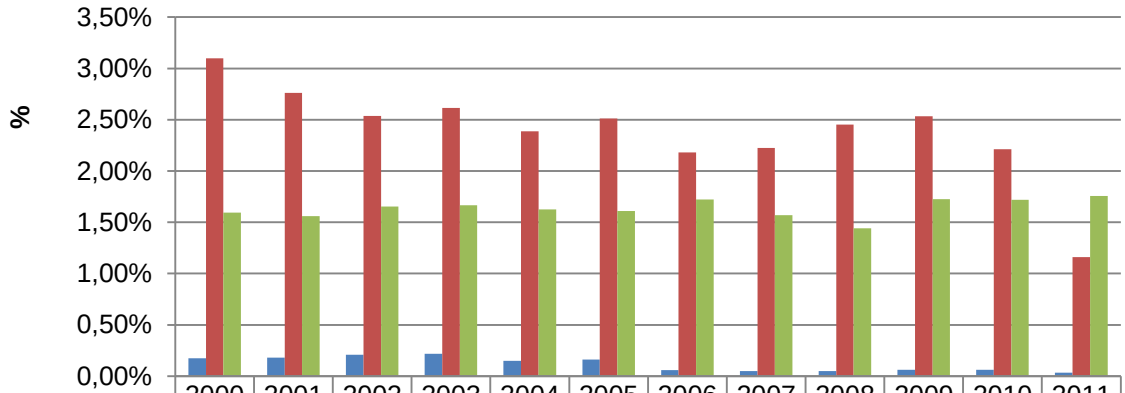
Conclusions on emissions:

- There is a tendency of reducing emissions of ozone precursors from the transport sector.
- The quantities of emissions of carbon monoxide (CO) are the highest in the sector.
- The transport sector has the largest share in the national emissions of nitrogen oxides.
- The road transport is the source of over 95% of the nitrogen oxides, over 98% of non-methane organic compounds and over 99% of the carbon monoxide emitted from transportation.



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
sulfur oxides	812	815	855	973	636	694	241	214	154	148	126	93
nitrogen oxides	3460	3210	3306	3435	3154	3408	2898	2884	3053	2647	2254	1390
ammonium	541	534	594	594	578	597	648	620	586	577	557	535

Fig. 9 Precursor emissions of PM10 in the transport sector (data source: (NSI, 2013))



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
sulfur oxides	0,17%	0,18%	0,21%	0,22%	0,15%	0,16%	0,06%	0,05%	0,05%	0,06%	0,06%	0,03%
nitrogen oxides	3,10%	2,76%	2,54%	2,62%	2,39%	2,51%	2,18%	2,23%	2,45%	2,53%	2,21%	1,16%
ammonium	1,59%	1,56%	1,65%	1,67%	1,62%	1,61%	1,72%	1,57%	1,44%	1,72%	1,72%	1,76%

Fig. 10 Share of emissions of PM10 from the transport of the national emissions (data source: (NSI, 2013))

3.3 Precursor emissions of PM10

Emissions of particulate matter (PM) in the atmosphere are primary or originate from precursor emissions (secondary emissions). According to Eurostat figures in 2010 Bulgaria takes first place in the group of relative levels of particulate matter (PM) (184.62%) and significantly exceeds the average rates of the EU (100%). One of the main sources of PM and its precursors is the transport sector. According to the National report on the status and protection of the environment in Bulgaria for 2013, the total quantity of particulate matter emitted from transportation is 1690 tons and 98% of it comes from road transport.

Data for the level and dynamics of precursor emissions of particulate matter in Bulgaria is shown in Figures 9 and 10. The values are determined on the basis of NOx, SO_2 and NH_3 emissions and the factors that influence their potential to form aerosols, indicating the maximum amount of a given pollutant which theoretically, in the presence of specific physical and chemical conditions, could turn into fine particles.

Conclusions:

- The share of the transport sector in national emissions of PM precursors is decreased from 0.79% in 2000 to 0.47% in 2011.
- There are tendencies for reducing emissions of sulphur and nitrogen oxides. For the period from 2000 to 2011, the emissions of sulphur oxides have decreased by ca. 89%, and those of nitrogen oxides by approximately 60%.
- The decrease of sulphur and nitrogen oxides is more significant for road transport (91.3%) for the same period.
- The emissions of ammonia, which come primarily from road transport, remain at the same level.

3.4 Emissions of greenhouse gases

The main greenhouse gases (GHG), which are included in the UN Framework Convention on climate change, are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hidrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6).

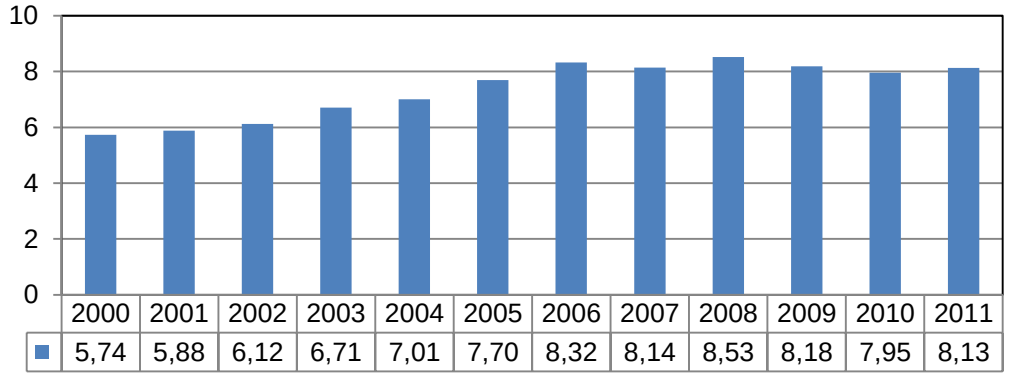


Fig. 11 Emissions of greenhouse gases from the transport (1000 t CO2 equivalent) (data source: (NSI, 2013))

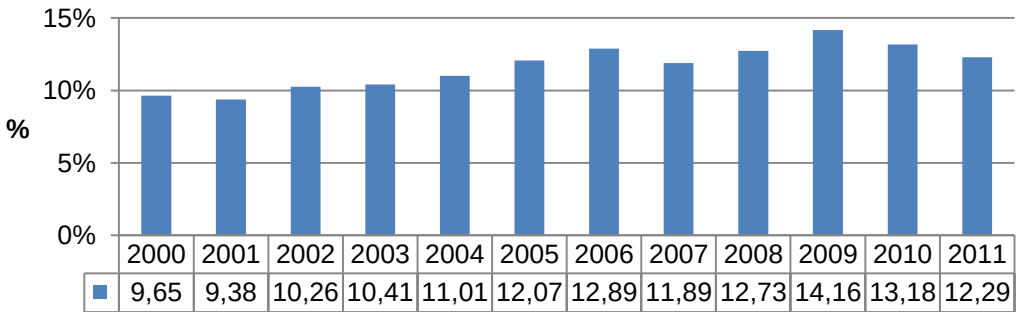


Fig. 12 Share of the transport in the national greenhouse gas emissions (data source: (NSI, 2013))

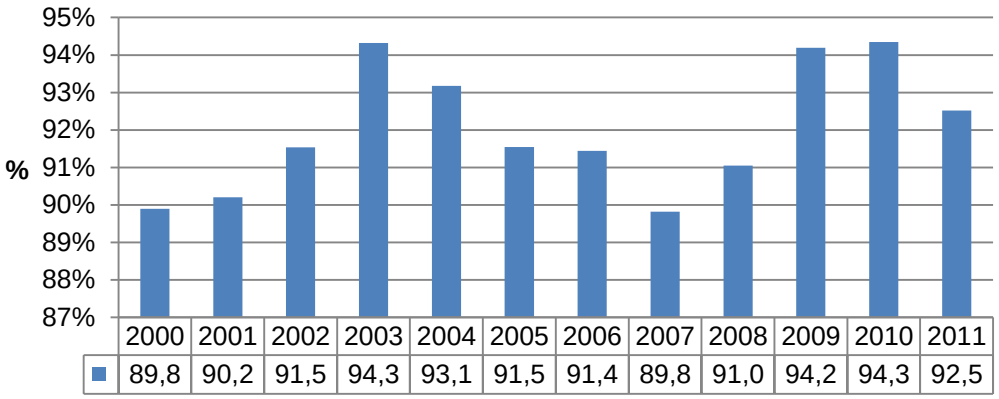


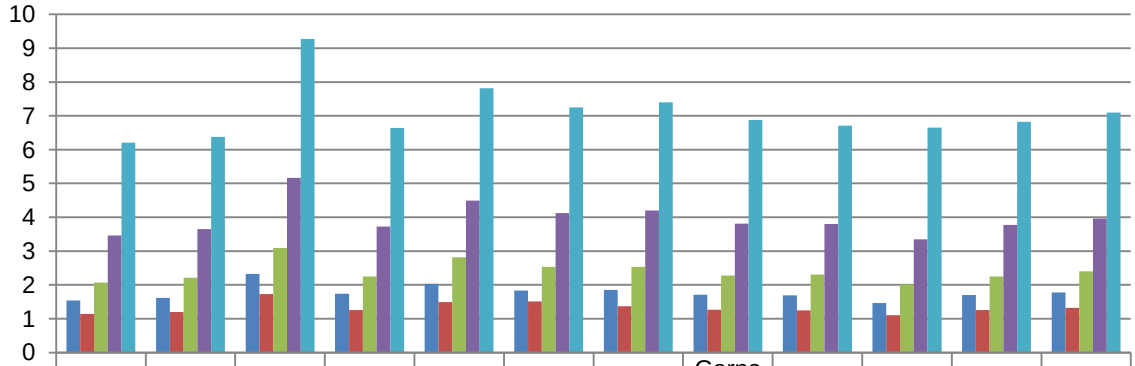
Fig. 13 Proportion of road transport in the greenhouse gas emissions in transport (data source: (NSI,2013))

Conclusions regarding emissions of GHG and data on Fig. 11 - 13 :

- Data illustrate that there is a tendency for reduction of the greenhouse gas emissions deriving from transport.
- There is a tendency towards increase of the share of greenhouse gases since 2000.
- In 2011, transport accounts for the emission of 8129 thousand tons CO2-EQ, representing 12.3% of the national emissions of greenhouse gases. In 2011, 92.5% of the greenhouse gas emissions come from the road transport.
- As per Eurostat data, the relative share of Bulgaria in CO2 emissions in the EU is negligible, only 0.85%. However, the level of emissions from newly registered vehicles is above the EU average of 18%.

3.5 Comparative evaluation

Quantification includes the relative emission levels definition for one passenger and of the overall emissions, the total quantities of emissions and the emission type and mode of transport structure. Upon application of that model, the received emission ratios for the transport of one passenger by car and train as per the included in the study relations are summarized per origination points in Figure 14.



	Karlo-vo	Plovdiv	Mez-dra	Pernik	Svoge	Burgas	Stara Zagora	Gorna Orjaho vitsa	Varna	Vidin	Sofia	Avg.
CO2	1,54	1,61	2,33	1,74	2,03	1,83	1,85	1,71	1,69	1,46	1,70	1,77
PEC	1,14	1,20	1,73	1,26	1,49	1,51	1,37	1,27	1,25	1,10	1,26	1,33
PM	2,07	2,21	3,09	2,25	2,82	2,53	2,53	2,28	2,30	2,02	2,25	2,40
NOX	3,46	3,65	5,17	3,72	4,50	4,13	4,20	3,82	3,80	3,35	3,77	3,96
NMHC	6,20	6,38	9,28	6,64	7,82	7,24	7,40	6,88	6,70	6,65	6,82	7,09

Fig. 14 Relative level of emmissions per passenger by car v.s per passenger by rail

Conclusions of comparative evaluation:

- The emissions for car carriage of one passenger are significantly higher than those in the rail transport. The relative level of emissions from road transport is with highest values for NMHC and on the average it is about 7 times higher than that in rail transport.
- The relative level of emissions of the road transport in relation to those of the rail transport is different for each of the examined relations, whereas, it has the highest values for journeys from Mezdra and Svoge.

Summarized data of the total quantities and the emission structure per type of transport are presented in Table 2.

Table 2. Emission quantities

Transport mode	Emissions (t/year)				
	CO_2	PM	NO_X	NMHC	Total
Railway	22306	5	49	3	22363
Road	1788125	584	8882	854	1798445
Total	1810430	589	8931	857	1820807
Transport mode	Emissions per passenger (kg/passenger)				
	CO_2	PM	NO_X	NMHC	Total
Railway	12.51	0	0.03	0	12.54
Road	21.5	0.01	0.11	0.01	21.63
Road/Railway	1.72	2.35	3.88	6.77	1.72
Transport mode	Share of emissions by transport modes				
	CO_2	PM	NO_X	NMHC	Total
Railway	1.23%	0.90%	0.55%	0.32%	1.23%
Road	98.77%	99.10%	99.45%	99.68%	98.77%

Conclusions on emission quantities:

- The substantial increase of the passenger flow (over 40 fold) and the relatively higher unit quantities of the emissions per passenger for car trips have led to an average of over 80 times larger quantities of emissions from road transport vs. those of trips by train.
- The relative share of road transport in the emissions of harmful substances is on the average over 98%.
- The CO_2 has the largest share in the quantity of emissions for one transported person (12.51 kg for rail and 21.5 kg. for road transport).

The value assessment indicates the price paid by society in connection with the consequences of harmful emissions. Table 3 illustrates the total value of the aggregated emissions of transports by the examined relations.

Table 3. Value of emissions

Transport mode	Total value of emissions (BGN*)				
	CO_2	PM	NO_X	NMHC	Total
Railway	1301902	304211	293577	1800	1901491
Road	104367136	33371978	53153859	568335	191461307
Total	105669038	33676189	53447436	570135	193362798
Transport mode	Share of transport modes in the emission value				
	CO_2	PM	NO_X	NMHC	Total
Railway	1.23%	0.90%	0.55%	0.32%	0.98%
Road	98.77%	99.10%	99.45%	99.68%	99.02%
Transport mode	Value per passenger (BGN/passenger)				
	CO_2	PM	NO_X	NMHC	Total
Railway	0.73	0.17	0.16	0.00	1.07
Road	1.26	0.40	0.64	0.01	2.30

**1 €=1.95583 BGN (Bulgarian Lev)*

Conclusions on the price paid by society in connection with the consequences of harmful emissions:

- The total amount of social expenditure in connection with harmful emissions deriving from the transportation of passengers as per the examined relations, which represents approximately 8% of the passenger flow of the country, is calculated to over 193 million BGN per year.
- 1.9 million BGN (or less than 1%) are the costs related to rail transport with a relative share of shipments of ca. 2.14%.
- A shift of 1% in the trips by car to that by rail will lead to a reduction in the costs by 0.53%.

4 FINAL CONCLUSIONS

In the first part of analysis the estimates for the level and dynamics of harmful for the environment emissions is shown that Bulgaria has reached a progress in relation to the main indicators for sustainable development of transport in terms of environmental impact. These results, however, to a great extent are due to the negative trends in the economic development, such as the overall reduction in transport traffic and the reduced market share of the rail transport.

The results of the comparative analysis between road and rail transport, despite the fact that it covers only part of the transport system of the country, demonstrate the need of pursual of a consistent and effective policy to increase the market share of passenger rail transport.

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Received for publication: 31.01.2014
Revision received: 21.05.2014
Accepted for publication: 23.06.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Jelezov, E., Kirilova, G., & Malinova, E. (2014, 07 15). Evaluation of the environmental influence of transport. (Z. Čekerevac, Ed.) *MRST Journal, 2*(2), 61-73. doi:10.12709/mest.02.02.02.07

*Style – **Chicago** Fifteenth Edition:*

Jelezov, Emil, Gergana Kirilova, and Elisaveta Malinova. 2014. "Evaluation of the environmental influence of transport." Edited by Zoran Čekerevac. *MRST Journal* (MESTE) 2 (2): 61-73. doi:10.12709/mest.02.02.02.07.

*Style – **GOST** Name Sort:*

Jelezov Emil, Kirilova Gergana and Malinova Elisaveta Evaluation of the environmental influence of transport [Journal] // MRST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 61-73.

*Style – **Harvard** Anglia:*

Jelezov, E., Kirilova, G. & Malinova, E., 2014. Evaluation of the environmental influence of transport. *MRST Journal,* 15 07, 2(2), pp. 61-73.

Style – **ISO 690** Numerical Reference:

Evaluation of the environmental influence of transport. **Jelezov, Emil, Kirilova, Gergana and Malinova, Elisaveta.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MRST Journal, Vol. 2, pp. 61-73.

MEST Journal
DOI 10.12709/mest.02.02.02.08

THE ROLE OF THE INTERNATIONAL TRANSPORT IN FOREIGN TRADE REALIZATION

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JEL category: **F4, L9, L92, N7, O18, R4, R41**

Abstract

The transportation costs comprise the basic share of the total costs in international tradeand highly influence the prices of goods. In a great number of cases, the trading considerations require transportation costs higher than the value of goods. The increasing trade flows and the aim to cut the delivery terms which aids the flexibility of the different companiesare pressing demands over the modes of the international transport.
The economic efficiency could be raised through increasing of the competitive advantages. Besides, the international labor specialization, the access to a greater variety of material and non-material products allowing more efficient production decisions, economies of scope and scale, etc. bring forward substantial requirements towards the new transport technologies and the modes of the international transport as a whole. Another tendency brings forward the increased pollution of the environment due to the high share of the road transport and air transport at short and medium distances.
On the other hand, the high competitiveness of the road transport at short and medium distances presents a good reason for the consumer choice, hence according to the statistical data, it is the most widely applied in the realizationof Bulgarian foreign trade. Another reason is that the partners from EU form a dominant share in the foreign trade of Bulgaria.
The higher prices of transport by air are still limiting its applicationin the cargo exchange, in comparison to the land transport.There are still options and opportunities for increasing the role of maritime transport and transport by inner waterways.

Key words: *international turnover of goods, international transport, transport policy, SITC*

1. INTRODUCTION

The shift towards greater interdependence of the world's economies has an enormous impact on the demand for transportation services. Production of labor intensive component parts has shifted to countries with lower cost labor markets requiring further transportation for assembly of the manufactured product. This decentralized manufacturing and assembly, involving multiple locations has increased both transportation and

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information management requirements. Shippers require global transportation coverage. Global markets increase the importance of international standards for transportation equipment and documentation.

Distribution of goods has become a major element of global trade, as it increases the competitiveness of regions with developed logistics. This kind of competitiveness is often identified with the competitiveness of other segments of the supply chain, for example, resources 'producing, manufacturing and retail. The existence of public and private interests leads to priorities in the allocation of investments in various infrastructure activities related to logistics and management of supply chains. Thus logistic zones disposing of intermodal terminals are created, for example port facilities and railway stations. The freight transportation services are increasingly outsourced and a lot of companies divide transport and storage activities from their core business. On the other hand, firms reduce the number of transport providers to optimize their costs and improve service. Performance of logistics activities provides opportunities for major transport companies to take control of more segments of the supply chain. Mergers and acquisitions create major logistic operators controlling the supply chain (i.e. megacarriers). The role of IT (for controlling the transport and related processes) and intermodal integration (controlling material flows) lead to the intensified supply chain operations through transactions and information exchange. Ultimately, logistics is the management of product flows in time and space and globalization puts additional pressure through the necessity of information flows management (order processing, booking transport capacity, routing, etc.)

The costs of transportation are a major part of the general logistic costs and highly influence the prices of commodities. There are numerous cases where commercial considerations allow for higher rate of the transportation costs, especially if the product life cycle is concerned. On the other hand, the globalization of the international trade and the increasing amount of internationally exchanges goods requires efforts to be made towards shortening the delivery times which brings forward a bigger flexibility for the competing companies. As a result the occupation of the international transport increases bearing in mind the possibility of substitution of one mode of transport with another, while delivering goods at their destination.

There are two basic tendencies influenced by the increased volumes of goods carried in the global world:

- The first one is improving economic efficiency through stronger competition. This is due to the international labour specialization, bringing forward competences, the access to greater variety of products and services, the existing opportunities for efficient production decisions, economies of scale, etc.;
- The second one is related to the increasing pollution of the air and the environment, due to the comparatively high rate of road transport and air transport at short distances.

The foreign trade of Bulgaria is among the examples for a considerable amount of freight carried by road, the main reason for that being establishing partnerships within EU region and other parts of Europe. Another unexplored mode of transport due to the unfavourable development of infrastructure is railway transport. Though suitable for medium distances it is still underestimated by the clients and they prefer road transport. The opportunities of waterborne transport are either neglected or underdeveloped, which should be reconsidered within the national transport policy. The participation of air transport is not stable due to different factors, mainly economic.

2. CURRENT STATE OF INTERNATIONAL TRANSPORT IN EU AND OECD CUNTRIES

The product trade between the EU countries in 2011 amounts to 2 804 131 million EUR, which almost doubles the value exported to non-EU countries, thus indicating the importance of the internal EU market for the member states, with the exception of Great Britain. The correlation in the freight volumes between the EU countries and out of the EU region is a result of their historic connections as well as their geographic position. The highest trade rates within the EU belong to Luxemburg, Slovakia and the Czech Republic (amounting at 80 % altogether), while there is a reduction of about 51,2% for Greece and almost

49,4% for the UK. Measuring the incoming and outgoing traffic levels, the greatest increase within the EC have reported Estonia (33,5%), Latvia (32,3%), Lithuania (28,2%) and Bulgaria (27.7%), while in Greece and Cyprus the decrease is accordingly 2.4 % and 0.3%. (Data retrieved and analysed from: (Euroepan Commission, 2014))

Table 1 Foreign trade within EU region

	Dispatches		Arrivals		Balance	
	2010	2011	2010	2011	2010	2011
EU-27	2 540.7	2 804.1	2 468.9	2 728.1	71.8	76.0
Belgium	225.2	246.8	205.5	226.5	19.6	20.3
Bulgaria	9.5	12.6	11.3	13.8	-1.8	-1.2
Czech Republic	84.3	96.7	71.6	81.1	12.7	15.7
Denmark	48.4	53.5	45.1	50.0	3.2	3.6
Germany	570.9	627.2	502.9	572.6	68.0	54.6
Estonia	6.0	8.0	7.4	9.9	-1.4	-1.9
Ireland	51.0	53.0	30.6	33.3	20.4	19.7
Greece	10.2	11.3	24.6	22.7	-14.4	-11.4
Spain	131.8	146.4	145.6	153.8	-13.8	-7.3
France	240.4	261.4	314.0	346.5	-73.6	-85.1
Italy	193.5	210.5	201.4	213.5	-7.9	-3.0
Cyprus	0.7	0.9	4.5	4.3	-3.8	-3.4
Latvia	4.8	6.2	6.7	9.1	-1.9	-2.8
Lithuania	9.5	12.4	10.0	12.6	-0.4	-0.3
Luxembourg	12.5	12.7	15.2	16.8	-2.7	-4.1
Hungary	55.6	61.2	45.0	51.2	10.6	10.1
Malta	1.1	1.3	2.7	3.3	-1.6	-2.0
Netherlands	334.4	368.2	181.4	199.8	153.0	168.5
Austria	82.0	90.2	92.9	105.4	-10.9	-15.2
Poland	95.3	104.7	95.1	103.6	0.3	1.2
Portugal	27.6	31.4	43.2	42.1	-15.6	-10.7
Romania	26.9	32.0	34.0	39.8	-7.0	-7.8
Slovenia	15.7	17.7	15.4	17.2	0.3	0.5
Slovakia	41.1	48.2	35.3	40.2	5.8	8.1
Finland	28.5	31.5	33.3	37.2	-4.8	-5.6
Sweden	68.3	75.4	75.3	86.2	-7.0	-10.8
United Kingdom	165.5	182.5	218.8	235.8	-53.3	-53.3

Source: Eurostat (online data code: tet00039)

According to the statistical data published in the Global Transport Trends in Perspective of OECD (Statistics Brief, 2013) for 2013, maritime freight, measured in tonnes loaded, grew to 8.7 billion tonnes in 2011, which is 6% above the pre-crisis peak in 2008. In tonne-miles, sea cargo grew by 5%, reaching 42.8 billion tonne-miles. Air freight transport rebounded in 2010 and grew 20% from the previous year to a new high of 172 billion freight tonne-kilometres, but the slowdown in world trade growth and the shifts in the commodity mix favouring sea transport, according to IATA are negatively influencing air transport.

Rail freight grew 3% in the OECD countries in 2011, reaching the tonne-km of the pre-crisis levels. The United States, Russia and China account for nearly 80% of total estimated global rail freight. Preliminary data for rail freight, based on our quarterly statistics, indicate stagnation in Europe and freight volume growth turning negative in the United States.

Road freight in the OECD and EU continue to stagnate below pre-crisis levels. In 2011, the growth in tonne-kilometres slowed down both in the OECD and EU countries, increasing by only 1%. The estimates for the EU area in 2012,

covering 75% of the total road tonne-kilometres, indicated a decline of around 4% for road freight.

Data on freight transport by inland waterways show a rapid recovery in tonne-kilometres in the OECD and the EU in 2010 after the decline in 2009. The growth in volume slowed down in the OECD in 2011 (+1%) and turned negative in the European Union (-4%). In 2010 and 2011, inland waterway freight volumes grew again rapidly, by 24% and 16% respectively. (Data retrieved and analysed from: (OECD, 2014))

In comparison to the other modes of transportation within EC, the **road freight transport** is continuously growing, the levels remaining high, particularly after the cabotage liberalization in 1993. By the beginning of 1994 the number of the cabotage permits amounts at 30 000, with validity terms within 2 months. After 1995 the registered increase of the permit numbers on an anual basis is about 30%, and the irrevocable entry of road cabotage in enacted from 01.07.1998. The Bulgarian road carriers profit from the cabotage rights in EU countries (Filipova, 2012) since 01.01.2012, with several years delay after the country joined the Community in 2007.

As far as the **railway freight transport** is concerned, after 2008 when certain success with increasing the freight volumes carried within EU was noticed, the economic crisis turned the trend backwards. Despite this, during the last two decades the share of railways in the general volume of freight carried internationally decreased from 28% to 15%. Notwithstanding the railway reforms (3 packages of measures about the railway transport in EU with a fourth one on the way), the lack of flexibility in the railway system exposed them to the competition of the road transport. The Bulgarian railway reform is further slowed by the predominant share of state ownership in the railway sector, though liberalization took place even before the country joined EU.

Maritime transport has always played an important role in trade between Member States as well in serving foreign trade with third countries. More than 30% of domestic freight transport in the EU and about 86% of foreign trade relations of the Member States are conducted through shipping. The legal background introducing free market in the field of maritime transport is enacted since the end of 1986 regulates the legal basis of the free market. Moreover, the principle of freedom in providing maritime transport services is realized through:

- Flag carriers of the member states, sailing between these countries;
- Flag carriers of the member states, sailing between these countries and third countries;
- Other free carries, operating between the member states and third countries;

There is a possibility the member states to coordinate their actions about restrictions on imposed upon them towards the free access to overseas trade with third countries. Also there is a procedure against unfair tariff actions adopted by ship-owners from third countries serving international shipping when these actions seriously affect trade to or from the EU.

Transport efficiency has increased significantly because of innovations and improvements in maritime transport. Ports are particularly important in the context since they serve as gateways to international trade through maritime shipping networks. As a result, the transferability of commodities, parts and finished goods has been improved.

The situation in the field of **air transport** is showing that the major airlines of the European countries (the flag carriers) engage in strategic partnerships with the principal North American carriers and those from other continents. Within an extended period of time, the instruments for international regulation of air transport are primarily focused on solving technical issues rather than on establishment of a competitive open market for transport services. The air traffic between Member States is subject mainly on bilateral agreements.

The modes of transportation described on the previous pages have each developed independently, without great concern to interconnection between them. In order to maximize the capacity of the nation's entire transportation system it is critical to invest in the physical links in the process of exchanging cargo between the modes as well as in technology for an

intermodal exchange of information. Containerization has been a key ingredient in the development of integrated intermodal transportation service. The introduction of standardized 20 (and later 40) foot containers brought forward the revolution in the movement of freight.

While containerization offers benefits even in single mode movements, one of its major benefits is that it makes the transfer of cargo between modes -- at ports, rail yards, and truck terminals -- faster, easier, cheaper and safer. The use of the same equipment for sea, rail and truck operations has a considerable towards improving the efficiency of operations. However practical problems still exist, like the standards of ocean containers, which are 20, 40 or 48 feet long. The different nature of the intermodal partnership is another important distinction between international and domestic intermodal activity - one is cooperative, the other is competitive.

3. INTERNATIONAL TRANSPORT FOR FOREIGN TRADE IN BULGARIA

The positive effect of global trade liberalization in recent years is bringing forward increased flows of goods, capital, people and information. This is affecting the economic activities of Bulgaria and statistical data are showing augmentation of the total activity of international transport during 2011 - 2012 due to increasing the imports by 2.5 % in 2012 compared to 2011, and exports by 8.8% in 2012 compared to 2011. The rate of exports and imports of Bulgaria is constantly growing, with value levels of imports exceeding those of the exports (NSI, 2013).

Table 2 Export, import and trading balance of Bulgaria by groups of generating trade partners' countries

Sectors of SITC	Export - FOB			Import - CIF		
	2011	2012	%	2011	2012	%
	millions BGN			millions BGN		
Total	39633.6	40622.9	2.5	45778.5	49793.7	8.8
EC states	24652.1	23779.8	-3.5	27183.7	29200.0	7.4
(OIC, OECD EAFT)	14981.5	16843.1	12.4	18594.8	20593.7	10.7

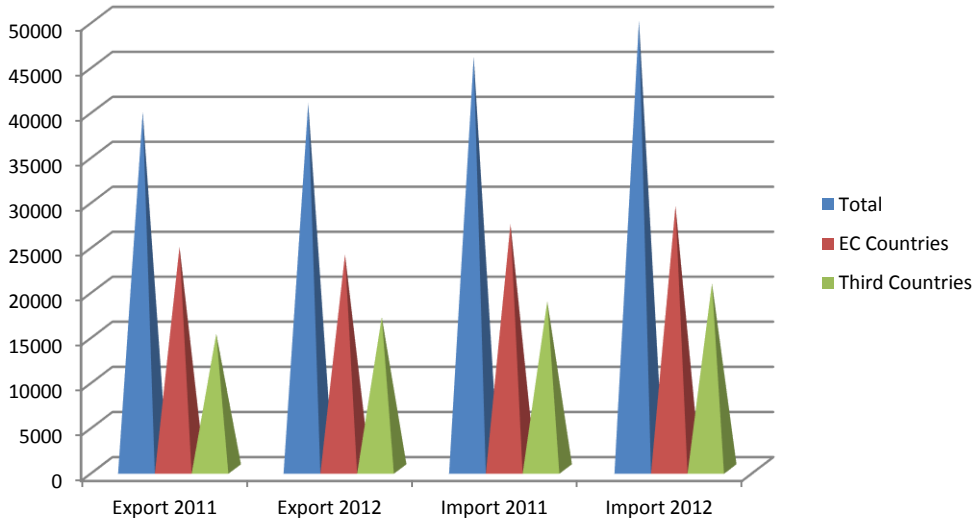


Diagram 1: Distribution of foreign trade activities
(Data retrieved and analised from: (Anon, Foreign trade: Statistical data, 2013))

Following the above mentioned trend, the preliminary data for the first six months of 2013 are showing 6.6% increase of exports towards EU member states in comparison with the same period one year earlier, reaching 14.7 billion BGN. The major foreign trade partners of Bulgaria are situated in Germany, Italy and France (medium-sized distances) as well as Rumania and Greece (short distances, neighbouring countries), comprising 68.8% of the total value of the imports from EU.

The diagram 1 is a graphical representation of the data in the table 2. In July 2013, the exports towards EU increased by 7.9% compared with the same period of 2012, amounting at 2.4 billion BGN. Bulgaria's imports from the EU for the period January - July 2013 increased by 1.0% compared with the same period of 2012, amounting at 17.3 billion BGN. The major foreign trade partners of Bulgaria were spotted to be again in Germany, Italy and France (medium-sized distance) as well as Romania and Greece (short distances, neighbouring countries), comprising 68.3% of the exports to the EU member states. In August 2013, the exports towards the EC countries increased by 20.2% compared with 2012, amounting at 2.4 billion BGN.

The indirect conclusion drawn, based upon the analysis above is that road transport, with the opportunity of two-way loading is very suitable and corresponding to the real situation established in the field of Bulgarian foreign trade.

In Bulgarian export to EU, distributed according SITC (Standard International Trade Classification of UN), during the first six months of 2013 compared to the same period in 2012, the highest rate was registered in the sectors "Non-alcoholic and alcoholic drinks and tobacco" (28.5%) as well as "Chemicals and related products "(24.0%). The biggest decline (15.6%) is registered in the sector "Mineral fuels, lubricants and related materials."

During the first six months of 2013, the imports of Bulgaria form the EU member states increased by 6.8% compared to the same period of 2012, amounting at 2.8 billion BGN. The foreign trade balance of Bulgaria with the EU countries for the first six months of 2013 is negative. After elimination of transport and insurance costs from the import prices, the balance is still negative, amounting at 1 780.4 million BGN. The largest percentage increase (by 11.4%) was recorded in the sector "Greases, oils and waxes of animal or vegetable origin", while the largest decrease (by 4.7%) occurred in the sector "Machinery, equipment and vehicles."

The widely spread use of road transport in the mutual trade with EC member state is proved by the consistent growing in the number of registered for public services freight vehicles. According to the National Institute of Statistics Reference Book 2013, in 2009 the number of registered road freight vehicles was 348,421, reaching the number of 399,900 in 2012. Besides the economic reason expressed above, the main reason for the increasing share of the road transport is seen in the technological adaptability for intracontinental transport services without transboarding, at a greater speed and shorter delivery terms in comparison with the rail transport (HSR being only available for passenger services). At the same time, for small consignments (above 10 kg), the comparison with the offering of air freight transport is showing a direct service, at a comparatively high speed, lower and more transparent price.

European transport policy is aiming to promote the development of rail transport as an alternative of the road transport in order to reduce the negative impact and the pressure on the environment. It is entirely in unison with the necessities foreign trade flows of Bulgaria, bearing in mind the turnover with EU member states, but difficult to be applied taking into account the need of modernization of railway infrastructure and the necessity to improve the image of railways in front of the clients. The freight turnover distributed by modes of foreign trade transport could be followed by the data presented in the table 3. It explicitly shows that the largest general decline was registered in 2010, followed by growth and reaching 2009 levels, thus presenting grounds to ascertain positive trend, despite the economic crisis. The outflow of customers from maritime transport can also be observed, providing a clear proof of the growing role of road transport. Also, the freight indicators and general data of surface freight transport are increasing, against decreasing of the indicators for water-borne transport. The comparison is based upon data from the third quarter of 2012 and 2013.

The diagram 2 is a graphical representation of the data in the previous table. The quoted data show a steadily declining share of maritime as well as of air transport. The reasons for the decreasing interest in air transport can be high price (highest of all modes), strict requirements on the goods to be transported by plane, due to the increased terrorist risk, more regulations, etc.

Table 3 Freight over modes of international transport in Bulgarian foreign trade
(Data retrieved and analised from: (Anon, Transport, 2014))

Mode of transport	2009	2010	2011	2012
Freight carried (thousands tons)				
Total	97045	87416	101338	107184
Land transport	87079	79441	95431	102155
Waterborne transport	9947	7964	5899	5023
Air transport	19	11	8	6

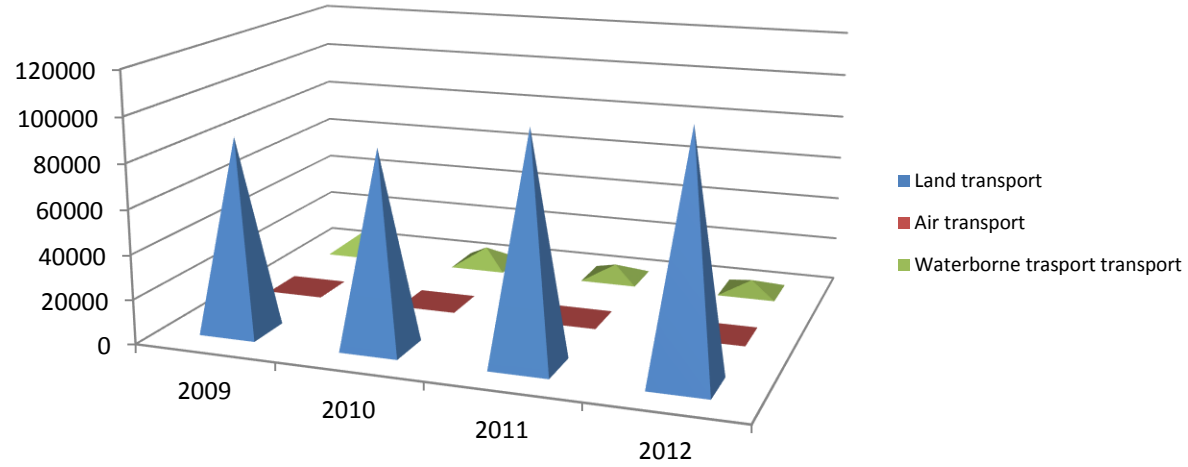


Diagram 2: Distribution of foreign trade cargo per modes of transport

The diagram 2 is a graphical representation of the data in the previous table. The quoted data show a steadily declining share of maritime as well as of air transport. The reasons for the decreasing interest in air transport can be high price (highest of all modes), strict requirements on the goods to be transported by plane, due to the increased terrorist risk, more regulations, etc.

According to the general opinion, the reduction of maritime transport share is mainly due to the crisis and the concentration of Bulgarian foreign trade within EC region (table 4). Long delivery times, considerdd to be another disadvantage of this mode transport is entirely unresponsive to the necessities of speedy deliveries in a time of intense competition.

The rapid recent development of Asian countries and the transformation of China and other countries in the region in leading manufacturing centers increased the demand for global and international long distance - haulage. The share of containerized general and bulk cargoes grew increasingly. However, the share of exports and imports between Bulgaria and China fell accordingly by 5.7% and 7.4% in 2013 in comparison to 2012. The data published in the National Institute of Statistics Reference Book 2013 as well as by the National Association of Bulgarian forwarders for the same period show decline in the carriage of goods by waterborne transport. Imports of freight by FCL from China and other Asian countries are reduced due to less economic efficiency from the slackened consumer

turnover. On the other hand, the already shown increase in international trade from neighboring countries such as Turkey, Romania and other EC partners lessens the importance of maritime transport in Bulgarian foreign trade.

Table 4 Basic indicators of freight transport (2012 - 2013)
(Data retrieved and analised from: (Anon, Transport, 2014))

Freight transport	2012	2013	%
Surface transport – product flows (tons)			
Total (th. tons)	27673.1	32815.8	118.6
Domestic freight	19941.3	23219.2	116.4
International freight	7731.8	9596.6	124.1
Surface transport – performance (tonkm)			
Total (mln. tonkm)	6976.1	8903.3	127.6
Domestic freight	1723.3	2203.6	127.9
International freight	5252.8	6699.7	127.5
Water borne transport - product flows (tons)			
Total (th. tons)	1395.1	666.1	47.7
Domestic freight	16.6	8.2	49.4
International freight	1378.5	657.9	47.7
Water borne transport - performance (tonkm)			
Total (mln. tonkm)	3460.0	976.7	28.2
Domestic freight	3.1	0.4	13.2
International freight	3456.9	976.3	28.2

Another important reason for the decrease of imports from Asian countries is considered to be the policy of protectionism in favor of European manufacturers by introducing temporary or permanent anti-dumping measures in the form of customs' charges on certain goods from China and other third countries (for example, for plastic sheet metal, bolts, seamless steel pipes, construction fibre glass nets, steel ropes, glass solar panels, etc.). Also, the sea freight rates are subject to increasing due to the remoteness between departure and destination points, port operations and container handling as well as some restrictions imposed upon maritime transport.

For the particular case of Bulgarian international transport, the Danube river transport is included in "water borne transport", thus providing other important reasons for decreasing its rate in the foreign trade servicing. The problems occurring with Danube river navigation, the shortcomings of the Danube port infrastructure are among the most important.

At the same time, data quoted by the Bulgarian Ministry of transport, IT and communications (MTITS, 2014) are contradicting, and reports show a different picture for the situation in maritime transport for 2013 (mediapool, 2014), meaning operation profit from the activities of National Company "Port Infrastructure", accounted for about 18 million BGN, with forecasted income amounting at 73 million BGN above the planned numbers; besides, investments for about 12 million BGN are reported, i.e. surpassing 2012 levels by 2 million BGN. The result of the leading ports'activities' analysis indicates that:

– Generally, in 2013 in the port of Varna was processed the nearly 11 million tons of cargo have been processed, and the expected financial result is amounting at 4,801 million

BGN (i.e., an increase of over 16% is reported in comparison with 2012). conducted A priority investment in two mobile harbour cranes of over 9 million BGN has been made;

- For 2013, the port of Burgas has realized income of almost 20.6 million, which is 5.3% above the planned value. There are expectations for a substantial profit, above 6,88 than the planned value;
- There are sighns of decrease in the activity of the main river port Ruse. The processed quantities in 2013 are 595 thousand tons less than 2012 (i.e. there is a decrease by 20.5 %). At the same time the profit level is higher compared to 2012.

Another viewpoint over foreign trade transport services is provided by container traffic, which is rather unbalanced (about imports for 2010 there is an increase of about 17%, then decline in 2011; about exports a 61% increase in 2010 and decline of 17% in 2011; the transit container traffic is increased 23% in 2010 and further with 61% in 2011), besides the mismatch of the data quoted by the National statistical institute of Bulgaria, and the indicates values in the government and business reports (on the page of the National Association of Bulgarian forwarders) for the same period.

Freight container traffic from and to Bulgaria at Thessaloniki port in 2012 shows almost two-fold increase compared to 2010 – (from 9068 to 16 030 TEU), giving Bulgaria a share of 39.1% of the total container-traffic in the port. The growth continues in 2013, and the traffic has increased about 29%. A major problem in the provision of combined transport from the port is the connection to the railway network, which is expected to be resolved by the end of 2014 through an investment of 20 million Euros for modernization activities.



Diagram 4. *Container transport of Bulgaria and other Black Sea Countries (Source: (Maritime, 2013))*

Overall increase in the cargo is available in the container terminals of the five Black Sea countries in 2013, showing a growth of 10.95% compared to 2012, when 1,359,562 full TEU were processed. The largest increase was registered in Ukraine and Romania, while Bulgarian terminals initially reported decline, which was overcome by the end of the year. During the reported period, 61.66% of the processed containers were intended for the domestic market and 38.34% - for export, which is a sign of a misbalance. Exports from the five countries of the Black Sea have increased by 17.76% compared to 2012. The highest levels reported Ukraine (53.35%) and Romania (22.80%). Decline was registered in Russia, Georgia and Bulgaria. The import levels in the region have increased by 7.11%, mainly due to Russia (13.02%). The number of the processed containers in Bulgarian ports is the least compared to other countries of the Black Sea region: 7.67%, followed by Georgia - 12.08%, Romania - 20.94%, Russia (only on the Black Sea) - 25.16% and Ukraine - 34.15%.

4. INTELLIGENT TRANSPORT SYSTEMS IN THE FIELD OF THE BULGARIAN TRANSPORT SYSTEM

Directive 2010/40/EU for ITS (Directives, 2010), adopted on 07.07.2010 was the starting point towards new transport technologies aiming at raising the efficiency and competitiveness of the different modes of transport as well as the influence of the transport sector over the environment in general.

In the field of international transport and the Strategy for implementation of European system of **railway traffic** management (ERTMS), backed up by the National plan for the implementation и there are activities for designing and building of dispatching centres and station computing systems for train traffic management. The first centralized management of the railway traffic on the line Plovdiv-Svilengrad -Turkish border was opened in 2012. The completed signalling and telecommunication systems allow a maximum designed speed of 160 km/h. The construction project also comprises the introduction of systems for remote control SCADA.

Providing and maintaining high levels of quality of **air navigation** services in the context of the Single European Sky, in terms of improving the organization and management of air transport in 2012 amendments has been achieved through the route network and scheduled arrivals and departures in accordance with the plans of the European Organisation for the Safety of Air Navigation (EUROCONTROL) . A functional airspace block DANUBE FAB was launched in 2012, through which Bulgaria and Romania together optimize the capacity of their airspace, increase cost-efficiency, improve or maintain the same level of safety and ensure environmental sustainability in the context of the increasing air traffic.

In the field of **maritime transport** for almost 5 years an Obligatory System for faraway detection and following of ships is functioning, through which the EU integrates all data about national flag carries' ships. As successful is valued the functioning of the Bulgarian part of the European system for shipping date exchange SafeSeaNet. Under a contract with the European Agency of safety at sea the access to the new information system STIRES, upgrading SafeSeaNet is ensured.

In the field of **river navigation** the project *"Information system for traffic management of vessels on the Danube"* has been worked upon, namely VTMIS, stage III.

5. CONCLUSION

The data quoted in table 2 show a tendency of decreasing the share of waterborne as well as air cargo transport. Among the reasons for the constraints in the use of air transport is considered to be the comparatively higher price than the other modes of transportations as well as increasing the regulations for carrying of goods by air (due to safety and security procedures).

On the other hand, the economic crisis has highly affected the maritime borne freight leading to shrinking the circle of foreign trade partnerships mainly within EC, i.e. regionalization versus globalization of trade relations. For example, there is a decrease in the import of containers (FCL) from China and other Asian countries and on the other hand an increase in the trading volumes from countries such as Turkey, Rumania, etc. Another shortcoming is the prolonged delivery terms.

The liberalized EC markets lift the burden over the prices of different commodities and the competitiveness is further increased by the decreased transportation costs due to the short distances and delivery terms. Also, the turnover of capital invested in big consignments is accelerated due to the speedy deliveries. Hence, in contradiction to the EC transportation policy, the efficiency of the road transport in foreign trade is further revealed.

The situation of North American and Asian companies' headquarters in Western Europe, FCL imports, stowage and distribution for partners in EC member states allows the facilitation of the global trade relations thus increasing the efficiency of foreign trade. The aggregation of the ordered deliveries is leading to a further decreasing of transportations costs. The market of Bulgaria, being comparatively small is highly profiting from the option deliveries of goods

through the headquarters of partners situated outside Europe.

In conclusion, due to the high competitiveness of the road haulage on short and medium-sized distances it is the most widely used in the international exchange of goods in the country and this tendency is revealed by the current statistical data in Bulgaria. The option air cargo is still limited due to the comparatively higher prices of transportation.

Advanced technologies, particularly IT, also have a great impact on physical distribution of freight. It has heightened competition by providing tools for more focused operations as well as new strategic partnerships within the supply chains.

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Received for publication: 31.01.2014
Revision received: 17.05.2014
Accepted for publication: 23.06.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Kirova, A. (2014, 07 15). The role of the international transport in foreign trade realization. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 74-85. doi:10.12709/mest.02.02.02.08

*Style – **Chicago** Fifteenth Edition:*

Kirova, Antoaneta. 2014. "The role of the international transport in foreign trade realization." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 74-85. doi:10.12709/mest.02.02.02.08.

*Style – **GOST** Name Sort:*

Kirova Antoaneta The role of the international transport in foreign trade realization [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 74-85.

*Style – **Harvard** Anglia:*

Kirova, A., 2014. The role of the international transport in foreign trade realization. *MEST Journal,* 15 07, 2(2), pp. 74-85.

Style – **ISO 690** Numerical Reference:

The role of the international transport in foreign trade realization. **Kirova, Antoaneta.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 74-85.

MEST Journal
DOI 10.12709/mest.02.02.02.09

LEADERSHIP SKILLS OF THE YOUNG PROFESSIONALS IN INDUSTRY AND OTHER INSTITUTIONS - A CASE STUDY FOR MASTER STUDENTS

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JEL category: **A2, A23, I23**

Abstract

Current conditions in the economies in transition, affected by the globalization of the business, focus on social awareness for improvement and development of the professional soft skills. While one part of the managers faces with bad forecasts for the success of the company, where they work, the rest of them, quite confidently and reliably recognize all possibilities, even in critical conditions and fail to cope with the challenges and to express their superiority above others. These professionals, so successful in modern organizations, are making the valuable asset of the companies that are leading. These managers possessing appropriate soft skills become the corner stone of organizational business success.

This paper deals with the self-awareness of the young professionals on master study curricula Project management at Faculty of Electrical Engineering and IT in Skopje, Republic of Macedonia. The survey includes was conndusted in a period of 5 years and the number of respondents is about hundred. The analysis summarized the results of a such survey concerning the managerial role and focus in detail in the responses pertaining to the interpersonal roles and leadership capability. The results could be used as a basis for further investigations of the nedeed skills for young professionals in industry for improvement of the effectiveness of their academic knowledge in engineering business practice.

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Keywords: *managerial role, leadership skills, professional competences, master students, engineering and project management*

1 INTRODUCTION

Current conditions in the economies in transition, affected by the globalization of the business, focus on social awareness for improvement and development of the professional soft skills. Today beyond the knowledge and technical skills, employers are looking for business awareness and capacity for self-esteem and self-management in job applicants (Atfield & Purcell, 2010).

Brown and Hesketh (2004) assume that personal qualities and attributes such as interpersonal skills and time-management, together with organisational skills and efficiently problem solving capacity are important for the chief managers in order to evaluate their employees. It is therefore necessary for graduate students or young managers to be able to communicate, negotiate, and work as a team, to have informational and decision making capacity and also ability to recognize all possibilities, even in critical conditions and to cope with the challenges. Only these kind of professionals are making the valuable asset of the companies that are working for.

Professionals and managers possessing appropriate soft skills become the cornerstone of organizational business success.

What about the young professionals and gradute students in small and developing countries like Republic of Macedonia? What kind of skills do they possess? Are they aware of that? How they develop and improve their skills?

Asking to self-esteem the knowledge and skills they possess, graduate students and young professionals from business organizations, did not come with facts, but compare themselves with the abilities of some reference groups. Relevant in the case of students, are skilled students or other members of their peer group, teachers or trainers. For the emloyees essential are senior and project managers with such abilities and attributes they are familiar to. It is, also, important to have in mind that self-rating or self-esteem is subjective and highly context-influenced.

Respondents also mention that universities attempt to incorporate skills development into their teaching and learning provisions. University and high schools in developed countries and European Union have already included huge modifications to existing course content, through embedding the development of particular skills within the wider academic content, the development of new courses and teaching methods, and the provision of stand-alone skills courses offered either at the departmental level or on a university-wide basis (Mason, Williams, & Cranmer, 2006, p. 4). That is the reason why master students have great expectation for enhancing or modifying their abilities and capacities through professional work and education.

In order to develop and/or to improve the ability to work on a projects, to communicate, negotiate, to lead and make decisions, all respondents continue education on next level, master or doctoral degree. They assume that Project management course with implementation of new Information and Communication Technologies (ICT) in projects and in business also is one of the best options.

To obtain the personal characteristics of the managers, Mintzberg (1973, pp. 54-99) analyses managerial activities and responsibilities. He divided managerial role into three sections: interpersonal, informational and decisional. Every section was than subdivided into three subsections. Within the interpersonal section he defined manager role as a leader, person that motivate, innovate and make changes to achieve business goals; as figurehead, promoter of commitment between organization and stakeholders and liaison is manager that prefer communication and relationships between stakeholders (between company and its partners and clients).

Monitor, disseminator and advocate roles are part of the informational category. When managers are able to identify the needs, programs and services

for company development they are classified as monitor.

Disseminator has competence to communicate effectively and to develop personal performance. They transmit the information from the outside to the company members, while advocate managers had working knowledge and transmit the date in opposite direction, from company to the clients or partners (outside of the company).

The final decisional section includes managers as: changers, disturbance handler, resource allocator and negotiator.

Managers that are willing to develop strategies, design plans and looking for new opportunities are named as changers or entrepreneurs. Disturbance Handler are forced to resolve problems/conflicts and to find new alternatives. They are named as resource allocator if they develop basic principles of company planning, manage times, develop budgets or design personnel plans. If managers are involved in major or local negotiations and have ability for problem solving and decision making they are classified as negotiators.

It is important to mention that all managerial roles (Mintzberg, 1973, p. 58), are integrated and could not be isolated from each other.

This paper summarize the results of a survey concerning the managerial role and focus in detail in the responses pertaining to interpersonal roles and leadership capability.

Section 2 of this paper examines the leadership trends in organization with a view to define academic leadership and evaluate the leadership potential of post-graduate candidates.

The results of the survey are presented in section 3. Conclusion and remarks from the survey are given in section 4.

2 LEADERSHIP TRENDS AND LITERATURE REVEIW

By the end of the 20th century Burns (1978) and House (1977) suggested that leadership could be understood as transformational or charismatic leadership. Transformational leaders were described as “inspirational, intellectually stimulating, challenging, visionary, development oriented and determined to maximize performance” (Avolio & Bass, 2004). This leadership style focuses more on the exchange between managers and associates through constructive and corrective behaviors, described as contingent reward, and management by exception, respectively (Avolio & Bass, 2002; 2004). What defines an effective leader or effective leadership behavior in one context may be completely different from what defines an effective leader in another setting (Fielder & Chemers, 1974).

The results from the large scale research project involving hundreds of business leaders in four different countries – Canada, the United States, England and China identified three core domains: character, capabilities and commitment, describing who the leaders are and what leaders do (Gandz, Crossan, Seijts, & Stephenson, 2010).

Leaders are forced to make changes in development of organizational strategies and ways of performing its business. Economy conditions impose leaders not only to adapt to changes in the environment but also to create change. However, academic leaders today must be able to demonstrate teamwork and communication capabilities beyond the confines of their own faculty or academic discipline. The organizations need leaders who are able to manage the processes of change that are one step ahead of others who think long term and who understand that maintaining the status quo is detrimental in terms of turbulent change and environments.

Such managers are leaders; they lead organizations towards achieving superior performance. Undoubtedly leadership has become a critical factor in the success of modern companies and most expensive resource in any company. Human Resource departments in companies are facing the problem how to find the best managers for key managerial positions.

3 RESEARCH METHODS AND ANALAYSIS

Although more present interest in the application of leadership, empirical research on the topic of leadership among young professionals in industry and other organizations in Republic of Macedonia are quite rare and for that reason a survey was conducted each year, from 2009 to 2014.

Almost hundred of young managers who continued their education on master studies in the field of Project Management - Leadership, management and communication have filled-out a particular questionnaire.

The group consists of female and male students, at the age of 24-40 years. Most of them have had working experience from 1-10 years and only 10% continue the education on masters after graduation.

The questionnaire included twelve questions divided into three sections. Section 1 collected students' perceptions of their development of interpersonal skills and abilities in recent years. Sections 2 collected similar data in relation to their informational capacity and Section 3 required data or comments on any aspect of decision making process. Section 1 was divided on three subsections. The first one refers to managerial role as a leader, the second one as a figurehead and third one as a liaison.

Students were asked to define their level of competence, their strengths and weaknesses in relation to a range of skills on a scale of '1 to 9'. '1' means that their skills are at low level, '5' that their skills are good and '9' that they have excellent managerial skills. They completed the questianary independently and anonymous. An analysis was performed and results are graficaly shown on fig.1-fig.9.

According to the results, 15 of 97 surveyed participates (15%), have excellent skills as figurehead, 20% have low skills and most of them, about 50% have good managerial skills as figurehead, as it is shown in the Fig.1. Two of 97 respondents though they didn't have ability to perform symbolic duties of a legal or social nature, if they are head of organization.

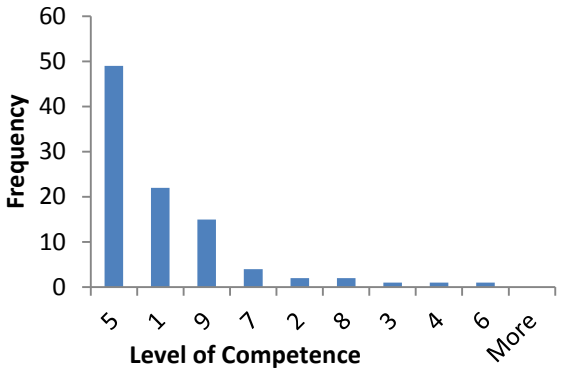


Fig. 1 Figurehead level of competence

Almost half of students think they have excelent (43%) or good (33%) competence as a liasion (Fig.2). They are able to communicate and to connect with experts outside the company in order to fullfill business startegy.

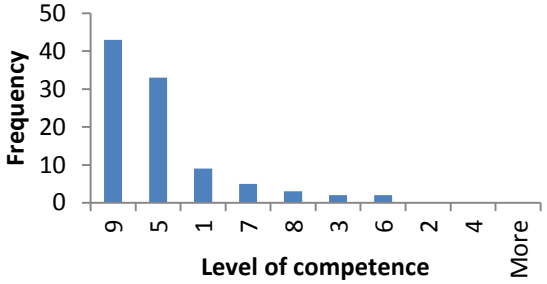


Fig. 2 Students ability as a liaison

The survey includes young managers from different types of companies likes banks, schools, private or pablic companies even employees in goverment or governmental bodies and agencies. How they score their ability as a leader is shown in Fig.3.

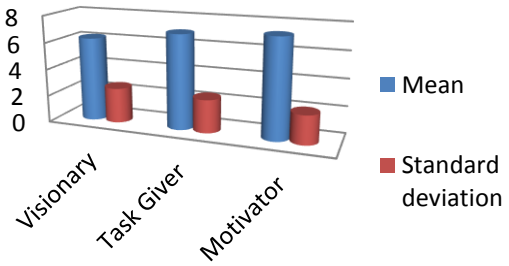


Fig. 3 Mean and Standard Deviation for Sample (Type of leader)

The results show that most of the respondents think they had ability to be a leader and have high skills as task giver (53%) and visionary (49%) (Fig.4). The other half of the respondents define good or poor ability to motivate, encourage inovative prformance and establish mutual trust.

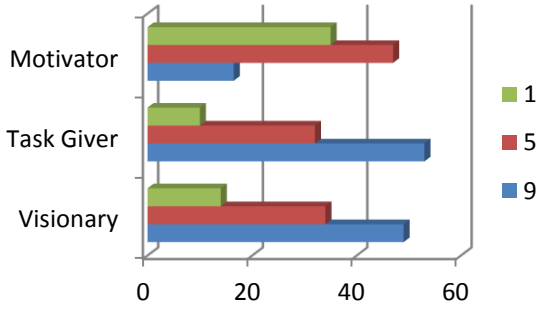


Fig. 4. Level of Competence - Leader

Respondents believe postgraduate course will enable them to develop certain skills, and half of them belive job experince will enable them to develop specialist knowledge.

This is a good indicator for the organizations, since it shows increasing awareness of the usefulness of postgraduate studies and special leadership trainings for improving creative thinking, motivation and aplaying quality standards and concepts.

Section 2 gives a perception in relation to respondents informational capacity (fig. 5). The results show that more than 50% of respondents have excelent disseminator ability, 48% had ability to understand informal organisation, to evaluate oppotunities, to monitor, and only 17% belived that can act like advocate.

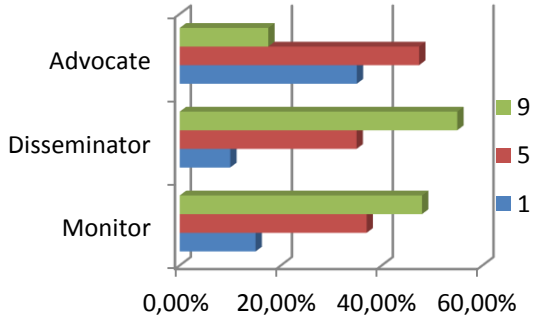


Fig. 5. Informational Roles

Mean and standard deviation for the sample is shown on fig. 5. Results show that respondents can easily assess the needs of institution, define programs, use them to evaluate opportunities, communicate (mean value for disseminator and monitor role of the manageres is almost the same) rather than to deal effectively with mass media and have working knowledge of political processess (low mean value for advocate).

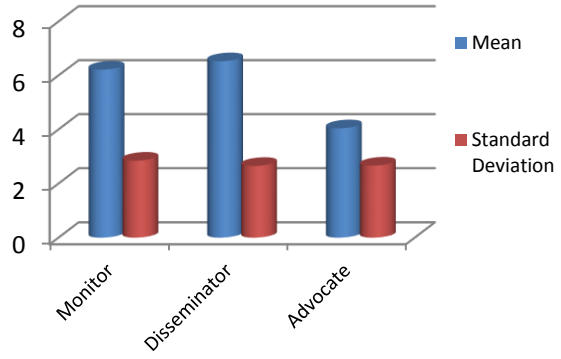


Fig. 6. Mean and Standard Deviation for Sample

The final set of questions concerne the decisional roles of young manageres and graduate students. The results at Fig.7 show that 60% of respondents are able to identify problems and work to resolve them.

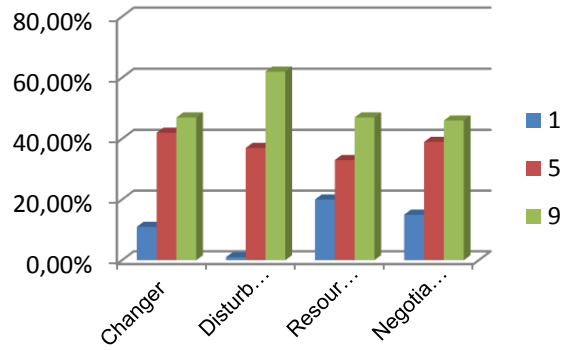


Fig. 7. Level of Competence - Leader

More than half respondents (50-60%), are familiar with decisional role. Mean value for disturbance handler is the bigest and for resource allocator and negotiotor the small one as it is shown in Fig. 8.

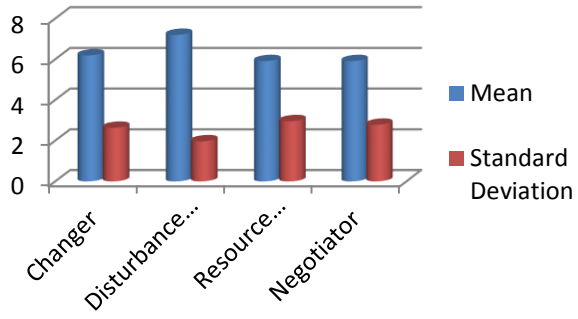


Fig. 8. Mean and Standard Deviation for Sample

3.1 Analysis of the results

The main objective of the survey was to examine young managers perception for their ability and skills. According to Mintzberg study (1973, p. 130), managers had common roles but with different emphasis. He postulated that managers at lower levels tend to spend more time as disturbance handlers and negotiators and less time in the figurehead role. He also named two grups of managers – informational and decisional. Although Mintzburg classified managerial roles as changer, negotiator, disturbance handler and resource handler in one group, analysis of the respondents‘ answers shows another (different) situation.

The results, as it is shown on Table 1, present the means and standard deviations for the sample of almost hundred master students on Project management study curricula.

According the means value, students can be devides into two groups. First formed group, with low mean value, consists of figurehead, changer and resource allocator. Figurehead functions seems relevant to changer function because this kind of managers contacts with chief executives from other company. changer role is to distribute the information externally (Shapira & Dunbar, 1980).

The second group, with mean value >6 consists of leader, concern with motivation and inovation in company, liaison - for building up an external informational system, negotiator, disturbance handler and monitor role.

Table 1. Means and standard deviation for mangerial roles

Managerial roles	Mean	Standard deviation
Visionary	6.237113	2.597167
Task Giver	7.010309	2.451593
Motivator	7.309278	2.127992
Figurehead	4.752577	2.626115
Liaison	6.56701	2.621653
Monitor	6.216495	2.843951
Disseminator	6.525773	2.65005
Advocate	4.041237	2.66113
Changer	6.185567	2.631262
Disturbance Handler	7.195876	1.966592
Resource Allocator	5.907216	2.954807
Negotiator	5.907216	2.780447

In 1964, in his study, Sayles notes that monitor phase always occure after solution of a problem so is better to be grouped with decisional roles then with informational as Mintzberg done in his study later (1973).

In order to correlate the managerial roles and to determine the distances among them, intercorrelation coeficients were calculated and shown on Fig. 9 managerial roles.

According to Fig. 9, first three managerial roles: visionary, task giver and motivator which define a leader role, are not correlated to each other. The correlation coefficient is about 0.1. It is assumed that correlation between them is too low, because of respondent’s subjectivity and because they try to find themselves in every managerial role.

If the lower bound for the value of correlation coefficient is asumed to be 0.5 than visionary as a manager role is correlated with monitor and changer/ entrepreneurial.

The question is: *Are they really connected*?

It seems that changer will be familiar with visionary role only if he knows how to recognize momentum during his business mission to find out new and better opportunities for the company.

	Visiona	Task Giv	Motivat	Figurel	Liaison	Monitc	Disser	Advoc	Chanç	Distu	Reso	Negot
Visionary	1.00											
Task Give	0.11	1.00										
Motivator	-0.07	0.31	1.00									
Figurehea	-0.09	0.13	-0.08	1.00								
Liaison	-0.06	-0.02	0.11	-0.12	1.00							
Monitor	1.00	0.13	-0.06	-0.09	-0.05	1.00						
Dissemin	0.11	0.88	0.27	0.14	-0.02	0.10	1.00					
Advocate	-0.08	0.19	0.60	0.06	-0.09	-0.11	0.28	1.00				
Changer	0.95	0.20	-0.02	-0.04	-0.05	0.96	0.15	-0.09	1.00			
Disturban	0.12	0.59	0.29	0.05	0.01	0.10	0.66	0.33	0.05	1.00		
Resource	0.22	0.22	0.16	-0.09	0.04	0.20	0.25	0.19	0.13	0.11	1.00	
Negotiato	0.34	0.22	-0.01	-0.04	-0.07	0.34	0.17	0.06	0.27	0.13	0.28	1.00

Fig. 9. Interrcorelation of managerial roles

Task giver, disseminator and disturbance handler form the second correlated group (Fig. 9). Every one of them is trying to define standards, procedures, to use new technologies and to make effective communication inside and outside of the organization.

With this correlation coefficient managerial roles inside interpersonal, informational and decisional roles (Mintzberg, 1974) are not correlated.

If the lower bound for the value of correlation coefficient is asumed to be 0.25, then task giver and motivator are correlated and form group leader. That means second group will be expanded with monitor and also with negotiator, correlated to resource allocator and changer. Now the results are almost the same as Mintzberg assumption for managerial roles.

For future data analysis and graphic presentation of the results Guttman and Lingoes Small Sample Analysis (SSA) is considered. The resulting clusters may be found to be somewhat interrelated, but considering the actual nature of the data in the survey, these clusters will probably more closely mirror the data than would the factors derived from the more familiar factor analytic technique with its more stringent metric assumptions (Taylor, 1971). Interest in the data matrix will focus, on estimating the clustering of individual questionnaire items in creating indices of those items which will provide more reliable measures of leadership skills.

4 CONCLUSIONS

A lot of companies, even in the developed countries failed because of not skilled staff. Economy in transition and social conditions could be the reason for low level management competence. The awareness of the necessity to maintain-up and apply technical knowledge, skills and technique, should be an objective for the top managers in the age of New Economy.

The survey conducted to the master students at one Faculty of Engineering and Information Technologies in the Republic of Macedonia is one of the rare surveys of this kind in the field of management and leadership.

According to the survey results, we can conclude that most of the respondents are aware of the ability and skills they possess. Most of them already had job experience and are aware of the technical knowledge they possess. But they believe that university is the place where can develop and improve most of the managerial roles, especially informational.

Now on one side there are graduate and master students and their abilities, and on the other side business and industry leaders and universities.

What kind of skills and knowledge university offer and what leaders need?

What today business leaders need is to increase productivity while decreasing costs. They highlighted three kind of skills needed by job

applicants: teamwork, communication and flexibility. Written and oral communication skills are very important in today's high-powered workplace, but employees must also be able to use modern technology to communicate.

Maybe it is time universities and high schools to develop new or to modify the study curriculum and context of the lectures according to business and industry needs.

We hope that such research, as it is already presented in this paper, could improve the self-awareness, integrity and needed competences of the young professionals at their engineering workplace for a more efficient and effective appliance of their respectable technical knowledge.

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Received for publication: 02.02.2014
Revision received: 05.06.2014
Accepted for publication: 23.06.2014

***How to cite this article**?*

*Style – **APA** Sixth Edition*

Kiteva Rogleva, N., Gegovska-Zajkova, S., & Fustik, V. (2014, 07 15). Leadership skills of the young professionals in industry and other institutions - a case study for master students. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 86-94. doi:10.12709/mest.02.02.02.09

*Style – **Chicago** Fifteenth Edition:*

Kiteva Rogleva, Nevenka, Sonja Gegovska-Zajkova, and Vangel Fustik. 2014. "Leadership skills of the young professionals in industry and other institutions - a case study for master students." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 86-94. doi:10.12709/mest.02.02.02.09.

*Style – **GOST** Name Sort:*

Kiteva Rogleva Nevenka, Gegovska-Zajkova Sonja and Fustik Vangel Leadership skills of the young professionals in industry and other institutions - a case study for master students [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 86-94.

*Style – **Harvard** Anglia:*

Kiteva Rogleva, N., Gegovska-Zajkova, S. & Fustik, V., 2014. Leadership skills of the young professionals in industry and other institutions - a case study for master students. *MEST Journal,* 15 07, 2(2), pp. 86-94.

Style – **ISO 690** Numerical Reference:

Leadership skills of the young professionals in industry and other institutions - a case study for master students. **Kiteva Rogleva, Nevenka, Gegovska-Zajkova, Sonja and Fustik, Vangel.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 86-94.

MEST Journal
DOI 10.12709/mest.02.02.02.10

E-LEARNING AND THE LIAISON WITH THE BUSINESS – ”TODOR KABLESHKOV“ UNIVERSITY OF TRANSPORT GOALS

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JEL category: **I2, I23, D83**

Abstract

One of the major tasks of Bulgaria is to create favorable conditions for the university education and professional development of young people. This is a national cause that will provide European development of Bulgaria. On the other hand the up-to-date education and opportunities for development of young people would contribute to improve demographic status in the country. Also they are major factors for overcoming the economic crisis and increasing the quality of life.

The EU developed a special Resolution on the social inclusion of young people to meet the requirements of the Lisbon Strategy. All activities and events aim at promoting the entrepreneurship, innovations and competencies of young people. The goal is to stimulate young people to strive for independency and realization by taking independent decisions and applying individual approach to life.

The paper discusses a concept for development of electronic forms for distance learning as required condition for adapting the education to business needs. The achieved results according to the implementation of the pre-set indicators in the project: “Development of Electronic Forms for Distance Learning and Virtual Library at Todor Kableshkov University of Transport, Sofia” are presented. In current market conditions, the contemporary universities have to efficiently combine education with business so that they can meet the challenges of the labor market.

Keywords: electronic forms, distance learning, education

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1. INTRODUCTION

The education is purposeful process, including both training and education of the students. An action plan eEurope has been adopted in 2000.

The plan envisages creation of information society for all. It is part of the Lisbon Strategy for modernizing the European knowledge-based economy. There is a need of high-quality generally accessible education that will offer opportunity for acquiring qualification and re-qualification, needed for the real business conditions in the country.

The number of the higher education institutions in Bulgaria – 51 (30 universities, 13 specialized higher schools and 8 independent colleges), demographic collapse, as well as the EU requirements for harmonizing the approaches and practice with other European countries resulted in an increase of competition in the field of university education.

Recently, the emigration of young people grew in Bulgaria. Also the rate of youth unemployment reports an increase. This in turn, results in increasing the competitiveness of the labor market for young professionals.

The young graduates in order to be successful in the labor market need to have knowledge, skills and competencies covering the employer's expectations. (Strategija, 2014)

Regarding this the education obtained in university has to meet the economic needs of specialists with certain skills and qualification.

2. TODOR KABLESHKOV UNIVERSITY OF TRANSPORT EDUCATIONAL POLICY

Todor Kableshkov University of Transport, having 92 – year –old history, is a key player on the educational market. It has considerable experience in training of transport specialists from all educational and qualification degrees and according the opinion of the managers of the big transport companies is the biggest academic and research transport centre in the country.

The university's educational policy is based on mission, objectives and strategic goals. It is addressed to the society needs in regional and national aspect.

Particularly important for the education is to realize bilateral liaison of each and every Program with the labor market:

- Experts from the practice in the best available way may formulate the need of fundamental and specialized knowledge that is required for the future work of the students. Therefore, many experts and practitioners orientate towards continuation of the education for the purpose of career development;
- Holding periodic meetings between representatives of the academic circles, which serve certain program, and representatives of the practice to discuss and agree on the guidelines for development and improvement of the program. The discussions and suggestions are resulting in introduction of new programs, update and adaptation of the curricula to the requirements of the business.

The fact that the training of the students in the university is for the most part theoretical and sometimes big discrepancies with the needs of the labor market are found out results in two approaches: besides the adaptation of the curricula to the needs of the users of young professionals, the method of **work on personal motivation of the students** is developed to increase their activity and more easily adapt them to the labor market.

The successful training of the students for the requirements of the working environment is carried out by means of realizing internships, providing firsthand liaison with the future employers.

Todor Kableshkov University of Transport supports close and regular liaisons with Bulgarian employers in the field of transport including but not limited to the sphere of organization and management of the transport activity, transport infrastructure, transport design, etc., as the focus during the last years is on the following aspects:

1. **Organization of Student Forums;** During these forums the students have personal meetings with successful Bulgarian Managers, Executive Directors and Entrepreneurs. The forums aim at providing the students with practical advice and guidelines for their future realization and career development.
2. **Carrying out specific trainings for better future realization in labor market**.

The training of the students, especially in the last semesters is extremely practical, as representatives of the business, proven experts in their spheres participate in the educational process.

Using this form of training the students have the opportunity to directly derive knowledge and experience from the employers, while the clarity in terms of the labor market requirements is increased.

According the up-to-date official date in Bulgaria only 1.7% from the population of working age (25-64 years) is involved in some form of lifelong learning, having stipulated in Lisbon Strategy for EU – 28 a figure of 13%. (CESE 1885, 2009) (Strategija, Lisbon Strategy, 2000)

Regarding this, it is very important an efficient lifelong learning system to be established and developed that will stimulate the constant "self improvement" and to facilitate employment mobility, for instance by means of applying appropriate didactic tools and contemporary forms of training – distance, electronic, etc.

The dynamic development of the contemporary information technologies provides opportunity for applying new contemporary and flexible forms of education.

The aim of the contemporary distance and eLearning is to provide each and every person that needs knowledge and skills with access to training via appropriate methods, resources and technologies.

The development of educational models based on technologies is a key concept of open education, released from spatial and time constrains.

The eLearning development is in line with the development policy of Todor Kableshkov University of Transport, namely:

- to develop and modernize educational process by means of new forms, methods and technical appliances, to enhance quality of education;
- to orient the education towards business requirements through maintaining stable relationships with companies, professional organizations, governmental and non-governmental institutions;
- to provide opportunities for lifelong learning and qualification.

E-learning is natural response to the needs of contemporary student for flexible training, accessible anytime and anywhere. Contemporary computer technologies are used for the preparation, carrying out and management of the training.

The Bulgarian eLearning faces a huge challenge, since a lot of resources are needed to become a fact. In 2012 our university developed a project that was approved: "Development of Electronic Forms for Distance Learning and Virtual Library at Todor Kableshkov University of Transport, Sofia" in search of opportunities for development of this alternative form of training. (Anon, 2012)

The project is under OP "Human Resources Development and co-funded by European Social Fund. The grant is amounting to BGN 530 994, 95 (EUR 270 000). The project objective is to promote lifelong learning process as opportunity for improving the professional skills and competencies without prolonged absence from work by developing electronic forms for distance learning at Todor Kableshkov University of Transport. It is envisaged to create conditions for development of electronic forms for distance learning, adapted to certain educational needs and providing opportunities for self-planning and development of flexible academic courses at Todor Kableshkov University of Transport. (BG051PO001-4.3.04-0024, 2012)

To this end, a Training Center will be developed and modernized. It will offer e-learning and services. Additionally, an Internal University Quality Assurance and Control System will be developed. A comprehensive training program in distance form, online courses (subjects) in a volume exceeding 50 % of the academic content of the respective curriculum of MSc Programs will be developed.

The courses will be uploaded to distance learning platform of Todor Kableshkov University of Transport.

The project implementation period is two years as we expect the electronization of the educational process to improve the quality of the academic activity and to provide an opportunity to the students to use course materials in a convenient for them time, without considering the strict time schedule of the classes.

The project upgrades the existing distance learning platform at Todor Kableshkov University of Transport, as 16 additional attractive electronic courses will be developed for different Programs.

University Informational and Telecommunication Centre has been created at the university that will administrate, coordinate and assist the organization of training through electronic courses.

Through its operation and services provided, the centre helps to improve the accessibility of the educational infrastructure and to create the conditions for equal access to education and training.

There have been chosen the most spread platform for direct and distance learning MOODLE that is widely used in higher schools and offers good conditions for communication between lecturers and students. For this system is typical that it has wide range of opportunities regarding designing courses, integrating electronic materials and has great options for control and verification of students' knowledge, communications, consultations, forum, statistics and many others.

A system for development, integration and maintenance of latest technologies in education is in process of development. This system includes Web – technologies of lecturers' activity (lectures, seminars, current monitoring of student activity, test system for assessment, etc), for instance Modular Teaching System – a complex system for computer training, Network based, electronic applications for the needs of training is some of the professional fields – accessible through the local students' network 24 hours per day, aiming to provide self-preparation and verification of knowledge, Multimedia products by courses.

The project implementation will result in a number of effects, more specifically:

- The creation and development of electronic forms of distance learning will stimulate the process of lifelong learning as opportunity to improve the professional skills and competencies, without long absence from work;
- We will improve access to educational environment and create conditions for efficient involvement in the academic process of persons, geographically distant or persons with special educational needs (people with disabilities) at Todor Kableshkov University of Transport.
- The curricula will be adapted to certain educational needs and will provide opportunities for individual planning and development of flexible academic courses.
- Concerning lecturers: During the process of development of Centre for Providing Electronic Education and Services at Todor Kableshkov University of Transport full provision in terms of available human and material resources will be ensured, including increasing the capacity and attractiveness of using (preparation and tuition) of electronic courses and thus the number of the lecturers, applying electronic methods of education will be increased.
- The access to academic materials, using the digitalized materials in the "Virtual Library" will be facilitated.

The project realization will create a ready to use model for multiplication for the needs of other universities or business organizations.

Because once established, the distance learning platform will provide opportunity with the available university resources to carry out unlimited number of courses according the developed and published in it curricula, as well as creating new distance forms of curricula or different courses/modules.

The integrated and functioning "Virtual Library" will provide the opportunity, without the need of additional resources, for re-use of its electronic resources, as well as their continuously enrichment with new records.

The available information mechanisms will provide the premise, and the need of further training

(employers and employees) and receiving income from additionally carried out electronic courses (in terms of lecturers) are sufficient incentive to be natural factors for multiplication of the educational model.

Being the only higher school, specialized in the field of transport, in Bulgaria, Todor Kableshkov University of Transport aims to promote the lifelong learning process by developing electronic forms of training.

Thus opportunities for improving the professional skill and competences, without long absence from work, are provided.

To develop and support a serious liaison between science and practice is of significant importance in present circumstances. It is necessary the scientific achievements to be actually used in practice, which in turn will contribute to greater efficiency and effectiveness of the research itself.

One of the most efficient solutions in the conditions of global economic crisis is to invest in science and to stimulate the interaction between business and scientific organizations.

Todor Kableshkov University of Transport is extremely competitive university on the educational market. The university ranking, carried out by surveying a number of indicators, positioned our university as leading institution in all professional fields.

To meet the needs of labor market Todor Kableshkov University of Transport offers attractive and useful programs with narrow specialization and specific focus.

They are accepted with interest, because the transport sector is one of the most promising sectors in the national economy lately.

The university trains students in two areas of higher education and seven professional fields, 12 BSc Programs, 19 MSc Programs and 22 PhD Programs.

To increase the quality of the education the curricula of all programs are periodically updated and harmonized with the needs of labor market, recommendations of the business, results of surveys in business organizations and institutions.

The training of students and PhD students is directed to an overall preparation, oriented to the specifics of certain type of business – the transport one.

Significant funding for development of the science and technologies under “Transport and Transport Infrastructure” Operational Program is envisaged in the European Research Area for the period till 2020.

There are many prerequisites for development of many projects, concerning the transport infrastructure both in Bulgaria and Europe.

The training of specialists with qualification in these areas determines the goals, tasks and motives for training in the different programs, offered at Todor Kableshkov University of Transport and is the response to the current needs of the labor market.

This educational market requires from its participants to offer adaptation, attraction of new categories of students by introducing attractive programs, courses, new forms of training. Leading direction in the education should be the focus in the future development of the students, to provide safe and reliable start of the career.

Nowadays the Higher Education System in Bulgaria faces a double challenge: on the one hand to accelerate and finish the process of structural reforms, overcoming the deceleration in relation to the leading European countries; on the other hand – to successfully realize the process of strategic transformation of the higher education: from supplementing service to factor for gaining advantage in the European and Global rivalry for knowledge, material prosperity and spiritual progress. (MON, 2014)

The long Bulgarian transition to democracy and market economy is yet to lead to the establishment of consistent qualifications systems, which would match the new economic processes. Amid conditions of high unemployment, the enterprises experience an ever increasing deficit of workers having the necessary qualifications, which, in parallel with the aging population and slow pace of the reforms in education, is seen as a significant impediment to economic growth and attraction of new investments into Bulgaria. (MES, 2014)

3. CONCLUSION

The implementation and development of sustainable liaison *education-science-business* is of key importance for the development of the economy.

This is a winning formula that provokes ideas and search for opportunities for their realization. The quote of George Bernard Shaw, namely: *"If you have and apple and I have an apple and we exchange these apples then you and I will still have one apple. But if you have an idea and I have an idea and we exchange these ideas, then each of us will have two ideas."* is appropriate.

The business and the universities have to work together, so that they give opportunities to young people to find their place, where they can suggest, share and develop their innovative ideas thus providing guaranteed economic development.

Therefore our main task, as university is to develop and support efficient liaison education-science-business, since it is important the specialists we train to be well prepared for the practice.

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Received for publication: 21.03.2014
Revision received: 03.06.2014
Accepted for publication: 23.06.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Kolev, P., Todorova, D., & Gergova, N. (2014, 07 15). E-learning and the liaison with the business - "Todor Kableshkov" University of transport goals. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 95-101. doi:10.12709/mest.02.02.02.10

*Style – **Chicago** Fifteenth Edition:*

Kolev, Petar, Daniela Todorova, and Nina Gergova. 2014. "E-learning and the liaison with the business - "Todor Kableshkov" University of transport goals." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 95-101. doi:10.12709/mest.02.02.02.10.

*Style – **GOST** Name Sort:*

Kolev Petar, Todorova Daniela and Gergova Nina E-learning and the liaison with the business - "Todor Kableshkov" University of transport goals [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 95-101.

*Style – **Harvard** Anglia:*

Kolev, P., Todorova, D. & Gergova, N., 2014. E-learning and the liaison with the business - "Todor Kableshkov" University of transport goals. *MEST Journal,* 15 07, 2(2), pp. 95-101.

Style – **ISO 690** Numerical Reference:

E-learning and the liaison with the business - "Todor Kableshkov" University of transport goals. **Kolev, Petar, Todorova, Daniela and Gergova, Nina.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 95-101.

MEST Journal
DOI 10.12709/mest.02.02.02.11

PROTECTION OF INFORMATION IN CRITICAL APPLICATION DATA PROCESSING SYSTEMS

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© MESTE NGO
JEL category: **G14, L15, L86**

Abstract

The results of researches, allowing raising the level of protection of the automated data processing systems of critical applications and intellectual information systems of enterprises are presented in the article. The mathematical models and results of vulnerability estimation of information systems which have Internet connection through various communication channels are resulted in this work. The system approach to solving problems of information security, proposed in this work provides for the integration of mathematical models of the processing and protection of information. The method of modeling the security policy to provide a highly reliable information processing has been developed. The mathematical models of synthesis of policy safe interaction of information processes, allowing security policy to consider separately the various structural components of network with the ability to its further interlinkages have been developed. Using the new mathematical models of flexible reliability, availability, confidentiality and integrity of information processed, allowing mathematically describe the mechanisms to ensure the availability and confidentiality of the information and take into account the quantitative requirements for data integrity.

Keywords: *Protection of Information, the data processing system, security policy, mathematical models*

1. INTRODUCTION

Every day, we put our personal information at risk. Whether we're signing up for a newsletter online, or making a transfer at a bank, these activities all involve the transmission of information that could be a problem if it fell into the wrong hands. That's what digital security is so important – it's vital to most of our everyday transactions. New methods are found every day to breach security, and new methods are constantly being developed. There are various ways to authenticate, encrypt, and otherwise protect important information being handled by organizations, and new ones are being added all the time.

In recent years, Intrusion Prevention System (IPS) has been widely implemented to prevent suspicious threats. Unlike the traditional Intrusion Detection System, IPS has additional features to secure the computer network system. IPS is an access control device with a prevention function,

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which enforces a network security policy, is a helpful device that allows for more granular blocking action.

In the last few years, the Internet has experienced explosive growth. Along with the widespread evolution of newly emerging services, the quantity and impact of attacks have been continuously increasing as well. IPS has become an essential component of computer security to predict and prevent attacks. They monitor, identify and recognize all real-time packets inbound and outbound. IPS, which proactively combines the firewall technique with that of the Intrusion Detection System, prevents attacks from entering the network by examining various data records and the detection demeanor of the pattern recognition sensor, when an attack is identified, intrusion prevention blocks and logs the offending data (Ahmad D., Dubrovskiy A. & Flinn X., 2005).

The signature is the primary means to identify activity in network traffic, and the host performs the detection of inbound and outbound packets and to block that activity before damage and network resources are accessed. However, IPS can effectively detect suspicious threats that are already known from a list of signatures. Common Vulnerability Exposure (According - cve.mitre.org) is a list of intruding products, and there are several IPS devices with proprietary standards. For this reason, many IPS vendors dedicate a large number of engineers to continuous observation of suspicious threats and update their product database with new signatures as threats arise (Shun-Chieh Lin & Shian-Shyong Tseng, 2004).

2. PREVIOUS RESEARCHES

Information security management has become a critical and challenging business function because of reasons such as rising cost of security breaches, increasing scale, scope and sophistication of information security attacks, complexity of information technology (IT) environments, shortage of qualified security professionals, diverse security solutions from vendors, and compliance and regulatory obligations (Goldman R., 2002).

The introduction of information technologies includes an associated level of risk, but specific security features can be incorporated into a system to mitigate that risk (Chertov R., Fahmy S., & Shroff N., 2006).

The sophistication and effectiveness of cyberattacks have steadily advanced. These attacks often take advantage of flaws in software code, use exploits that can circumvent signature-based tools that commonly identify and prevent known threats, and social engineering techniques designed to trick the unsuspecting user into divulging sensitive information or propagating attacks. These attacks are becoming increasingly automated with the use of botnets - compromised computers that can be remotely controlled by attackers to automatically launch attacks. Bots (short for robots) have become a key automation tool to speed the infection of vulnerable systems.

The reason lies in the fundamental theoretical difficulties of modeling technologies ensuring the reliability and protection of information processes (IP) in automated data processing systems of critical applications (ADPS CA) occurring when you try to connect a promising approach to ensure the safety and protection of IP from UA with the flexibility of the protective mechanisms.

It should be noted that the ADPS CA are the result of the introduction of computer technology in the field of critical objects (military sites, environmentally dangerous production, nuclear power plants, objects of transport, communication, financial and credit sector, etc.), which are characterized as not acceptable to society damages for breach their performance. In ADPS CA, reliability of IP overrides its functionality. Moreover, it is preferred to use perspective approach (Chi S., Park J., Jung K. & Lee J., 2001).

Any model of the security policy (SP) to ensure the highly reliable information processing (HRIP) necessarily support the global SP characterizing the desired properties of IP (access syntax), and can support the local SP, which characterizes the transition rules of IP between the neighboring states (the semantics of access). Availability of support the local SP means dynamics of the appropriate model, and absence means the static. The dynamic model of SP, as opposed to static, imposes constraints on the state of IP (Gorodetski V. & Kotenko I., 2002).

The object of the study, the results of which are presented in this article are HRIP processes with

flexible protective mechanisms. The subject of the study are methods and process models HRIP to ensure the prevention of its vulnerabilities against threats of intentional and unintentional nature and flexibility of the defense mechanisms (Harel D., 1987).

A method of hierarchical structuring of IP resources in ADPS, providing unity consider global and local SP reference model of secure automated system (RMSAS) has been provided. A fifteen-layer RMSAS structuring as an extension of the well-known seven-layer OSI model in the direction of decomposition of its application layer has been proposed (see Figure 1).

Leveled of security systems services (SSS) includes leveled object control (OC), service CA, security monitor (SM), consisting of a security monitor objects (SMO) and the safety monitor subjects (SMS).

For the mathematical modeling of IP in ADPS, it is offered its formal representation by a known device of E-networks created in the development of the now-classic unit of Petri nets.

It develops the traditional graph formalization in the field by introducing a standard for the E-network unit of time delay procedures and permitting procedures. E-network representation of the dynamics of functioning in a typical MIP UA in normal ADPS CA and functioning of the IP dynamics in the reference ADPS has been developed.

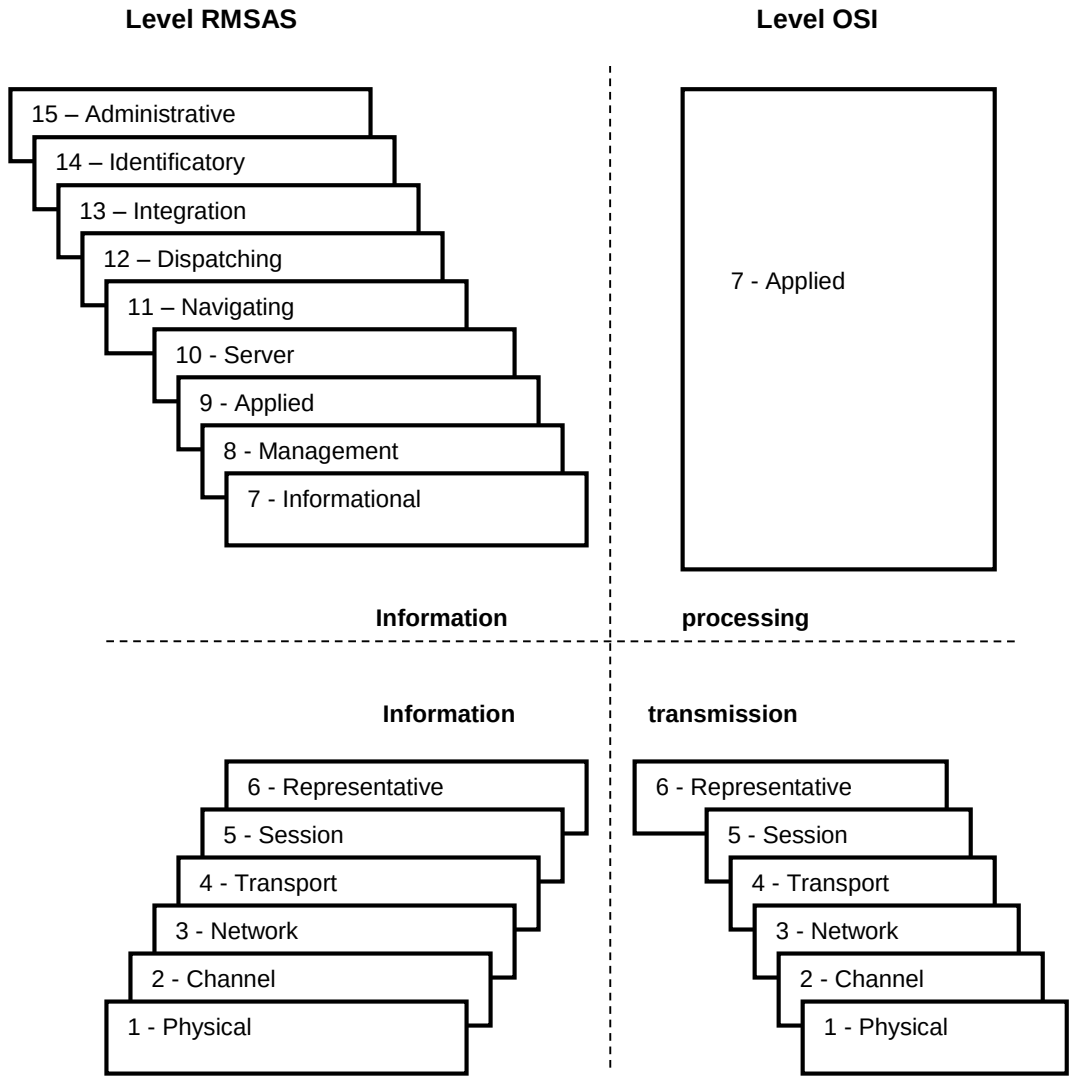


Fig. 1. The hierarchical structuring of IP resources in ADPS
Source: (Rogozin E., 2003)

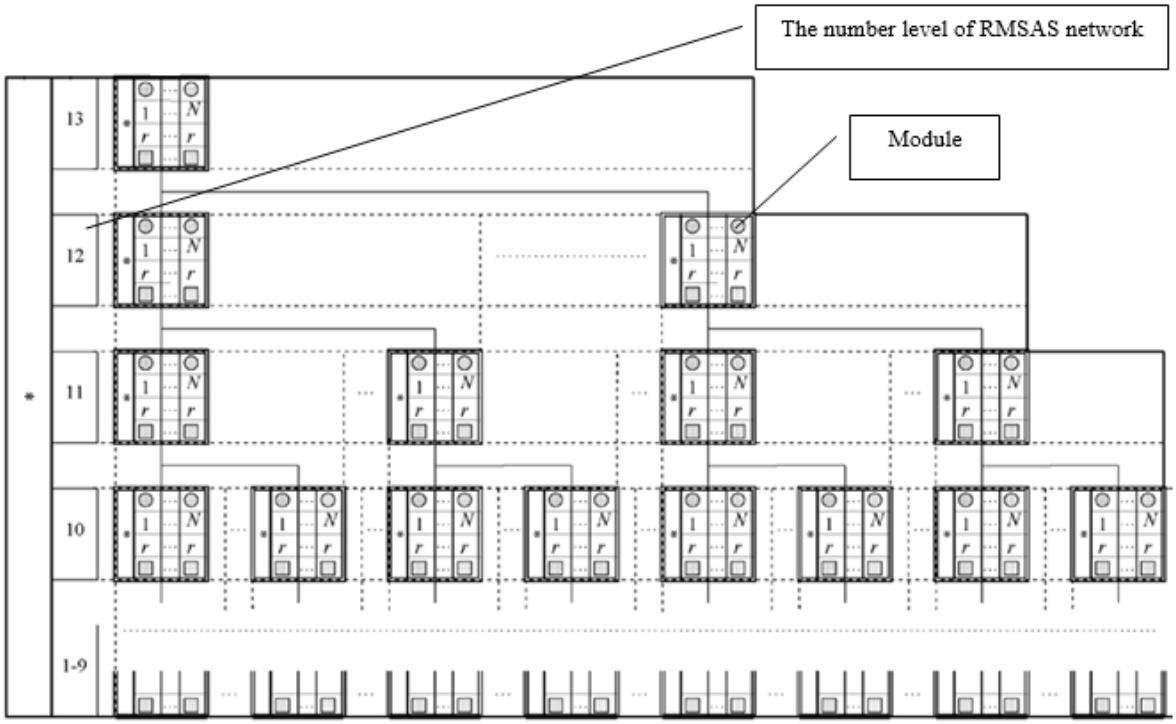


Fig. 2. Graphical representation of the reference model of the protected automation system (network) in the canonical form (Source: (Goldman R., 2002))

However, due to the specificity of IP in the reference ADPS, the direct use for it such general formalisms inherent for E-networks is little effective (Rogozin E., 2003).Therefore, based on the E-networks unit has been built a new graph-theoretic unit of problem-oriented nature – RMSAS networks. Relying of an equivalent E-network representation, a proper specific syntactic representation of RMSAS networks by minimizing the descriptive means has been found – the canonical form of RMSAS network (see Figure 2).

3. THE FUNDAMENTAL THEOREM OF SECURITY FOR DISCRETIONARY SECURITY POLICY FOR SUPERBLOCK RMSAS NETWORK

During researches have been developed mathematical models of the synthesis of secure communications policy interaction of the reference ADPS that can consider SP of some IP (at different structural components RMSAS-network) with the possibility of further interlinkages (a layered synthesis of SP on RMSAS network). As the basic structural components have been defined in a network interpretation (as part of RMSAS network) and systemic treatment (as appropriate system quantities) layers and concepts of superblock of RMSAS network. The layer $S_{l_H \ldots l_в}$ of the level $l_в$ with the lowest level l_H of RMSAS network $B_0 = S_{1..L}$ is *(in the network interpretation)* part of RMSAS network related to the levels of RMSAS with numbers $l = \overline{l_H, l_в}$.

Superblock $S_{l_H \ldots l_в}(I)$ of the level l_H with the index I (given superblock of RMSAS network $S_{l_H \ldots l_в}$) of RMSAS network $B_0 = B_{1..L}(0)$ is a part of layer $S_{l_H \ldots l_в}$ with moduls index $J \subseteq I$. The ways setting various SP on individual structural components of RMSAS network, in particular, its layers and superblocks, by analogy with the task SP in all RMSAS network are identified.

For the account of the possibility of SP interlinkages given on the various structural components of RMSAS network, the concept of SP compatibility in two different senses is formally defined for all pairs of types of SP. Weak

compatibility of random SP Ψ_1 and Ψ_2, denoted as $\Psi_1 \sim \Psi_2$ is the lack of direct conflict between them. Strong compatibility of random SP Ψ_1 and Ψ_2, denoted as $\Psi_1 \approx \Psi_2$ is the inability of a conflict between them, even in distributing of SP to all RMSAS network.

Layerwise synthesis of security policies of RMSAS network is a synthesis of the SP of RMSAS network in general suitably chosen its ultimately degraded by multiple superblocks. Methods of such expansions are defined by specifying RMSAS network of relevant half rings quantities. In particular, when using a layerwise synthesis of SP on superblocks of database management system (DBMS) (formalized to access information directly in RMSAS) used half ring

$$\left\{ \begin{matrix} \emptyset; \mathrm{B}_0; B_{10...13}(0); \\ B_{7...9}(I(u)) \end{matrix} \middle| \begin{matrix} u \in U_9; \\ B_{1...6}(I(u)) \end{matrix} \middle| u \in U_6 \right\} \quad (1)$$

layered superblock structure of RMSAS network, given of its partition into adjacent layers $\{S_{1...6}, S_{7..9}, S_{10...13}\}$, or half ring

$$\left\{ \begin{matrix} \emptyset; \mathrm{B}_0; B_{9...13}(0); \\ B_{7...9}(I(u)) \\ B_{1...7}(I(u)) \end{matrix} \middle| \begin{matrix} u \in U_9; \\ \\ u \in U_7 \end{matrix} \right\} \quad (2)$$

layered superblock structure of RMSAS network, given of its covering of the related layers $\{S_{1...6}, S_{7...9}, S_{10...13}\}$.

For the analysis of aspects of security of information processed in the reference ADPS (integrity, availability and confidentiality of information) are developed their mathematical model. At the same time, confidentiality and availability of modeling is carried out through the research of the mathematical properties of the SP complex of RMSAS network and the integrity of the modeling – through the modeling of optimal CA control service of information processed in the reference ADPS (Lahno V. & Petrov A., 2010).

Ensuring the confidentiality is modeled as a range of SP for RMSAS network as a whole or as a particular superblock. Given a super-block *B* with the quantities $P_H(B)$, $P_l(B)$ and $P(B)$ allowing the lower positions of *l*-th and all other levels quantities $U_l(B)$ and $U(B)$ of modules *l*-th and all other levels, in this SP superblock complex.

Then execution on superblock *B* of the global SP $\Psi_g(B)$, discretionary *l*-th level of SP $\Psi_{\partial l}(B)$, SP-leveled local $\Psi_{ll}(B)$, local SP $\Psi_l(B)$ and discretionary SP with permits respectively $\Psi_{\partial p}(B)$ means:

$$(\forall p = p[I,\alpha] \in P_H(B) \setminus \Psi_g(B))(M_{out}[I,\alpha] = 0); \quad (3)$$

$$(\forall p = P[I,\alpha] \in P_l(B) \setminus \Psi_{\partial l}(B))(M_{out}[I,\alpha] = 0); \quad (4)$$

$$(\forall p = p[I(u),\alpha] \in P_l(B) | u \in U_l(B), \alpha = \overline{1,N}, \langle I(u),\alpha,0\rangle \in \Psi_{ll}(B)) \; ; \quad (5)$$
$$(M_{out}[I,\alpha] = 0)$$

$$(\forall p = p[I(u),\alpha] \in P(B) | u \in U(B), \alpha = \overline{1,N}, \langle I(u),\alpha,0\rangle \in \Psi_l(B)) \; ; \quad (6)$$
$$(M_{out}[I,\alpha] = 0)$$

$$(\forall p = p[I,\alpha] \in P(B) \setminus \Psi_{\partial p}(B)) \cdot (M_{out}[I,\alpha] = 0) \; . \quad (7)$$

Development of the model of information confidentiality allowed a rigorous mathematical modeling at the SP level to prove in the following theorems the invulnerability of information in the reference ADPS on the aspect of confidentiality, that means that for any given access discretionary authorities to the physical or arbitrary level of RMSAS is determined by its supporting rules of safe intersubjective control, performing that unauthorized access impossible.

The fundamental theorem of security for discretionary SP for superblock RMSAS network. If at the initial moment given discretionary SP is performed at a certain superblock, and all the movements of chips satisfy the inducing local SP on the same superblock, then at any time thereafter, this given discretionary SP on superblock is also performed.

The fundamental theorem of security for the global SP superblock RMSAS network. If at the initial moment is performed inducing given global SP at a certain superblock discretionary SP in the same superblock, and all the movements of chips satisfy a given the inducing global SP of local SP at this superblock, then at any time thereafter, will be performed given global SP at this superblock.

Ensuring of information accessibility is modeled as a attainability of labeling induced by this SP of RMSAS network in general or on a particular superblock of the root labeling.

Root labeling of RMSAS network is characterized by all common positions contain the top-level chip, but none of other positions of RMSAS network does not contain a chip, which is interpreted as the absence of hyperprocesses in the reference ADPS:

$$\begin{aligned}&(\forall p = p[I,\alpha] \in P_L)(M_{in}[I,\alpha] = 1 \wedge \\ &\wedge M_{out}[I,\alpha] = 0) \wedge \\ &\wedge (\forall p = p[I,\alpha] \in P \setminus P_L) \cdot \\ &(M_{in}[I,\alpha] = M_{out}[I,\alpha] = 0).\end{aligned} \quad (8)$$

Labelling of RMSAS network induced by a given discretionary SP with globalized performance $\Omega_{\partial\varepsilon}$, characterized by the fact that all positions of a globalized quantity of allowed positions of the discretionary SP contain a chip, but none of the other entries of RMSAS network does not contain a chip, which is interpreted as the implementation of discretionary access to the resources of the reference ADPS to the maximum authority stipulated for given discretionary SP:

$$\begin{aligned}&(\forall p = p[I,\alpha] \in \Psi_{\partial\varepsilon})(M_{in}[I,\alpha] = 0 \wedge \\ &\wedge M_{out}[I,\alpha] = 1) \wedge \\ &\wedge (\forall p = p[I,\alpha] \in P \setminus \Psi_{\partial\varepsilon}) \cdot \\ &(M_{in}[I,\alpha] = M_{out}[I,\alpha] = 0).\end{aligned} \quad (9)$$

Labelling of RMSAS network induced by the given global SP is defined as induced discretionary SP, inducing given global SP.

Development of the model of availability of information mathematically rigorous allowed at the level of SP models to prove the following theorems of invulnerability of information processed in the reference ADPS, on aspect of the availability, which means that for any given discretionary powers of access to the physical or arbitrary level of RMSAS are uniquely determined their supporting rules of safe management of intersubject under which the legal access is possible.

The fundamental theorem of attainability for discretionary SP superblock of RMSAS network: For any given discretionary SP at this superblock is always possible to determine the permitting processes and procedures of the conversion for all the modules of the superblock that induced this discretionary SP at this superblock its labeling less attainable from its root within labeling of the inducing this discretionary SP by local SP at this superblock.

The fundamental theorem of for the global attainability SP on superblock of RMSAS network: For any given global SP at this superblock is always possible to determine the permitting processes and procedures of for the conversion all the modules of the superblock that induced this global SP at this superblock its labeling less attainable from its root labeling of within the inducing this global SP by local SP at this superblock.

During the research is made a modeling of organizational and technological CA service management in case of IP protection of the typical SIP UA and in case of the reference ADPS. In both cases, for supporting the adoption of appropriate information security manager solutions it is proposed to use the new subsystem - the automated service management subsystem of information CA.

A set of criteria quality of service operation of CA as a control object has been substantiated:

1) dynamic – “adequacy of functioning” E_{af}, “temporary aggressiveness of functioning” E_{ta};
2) static (Boolean) – “functionality” E_f, “resource aggressiveness of functioning” E_{ra}, “functional aggressiveness of functioning” E_{fa}, “usability” E_{yu}.

The mathematical models of evaluation criteria for the quality of service operation of CA are developed. Allowable value of static criteria means that it is monitored for integrity only that

and even then, when it is provided by the operational documentation for ADPS.

For the estimation of dynamic criteria semi-Markov model are proposed generated for normal ADPS based on the original E-network, and for the reference ADPS - original RMSAS network (see Figure 2). These semi-Markov models make it possible to take into account the probabilistic nature of transitions between different states, and the arbitrariness of the laws of distribution of time of transitions at the assumption of independence probability and time transition from the previous transitions.

In the case of IP protection of typical SIP UA models of estimation of two dynamic criteria are represented respectively by two finite semi-Markov processes (FSP) with different initial and final states. In the case of the reference ADPS, two dynamic criteria expressed in terms of an auxiliary *criteria of dynamic efficiency E*, the model for the evaluation of which is represented by its FSP. Each FSP is described by its semi-Markov matrix $H(\tau) = \|H_{ij}(\tau)\|$, $i = \overline{1,n}$, $j = \overline{1,n}$, formed based on the original network. Its element is $H_{ij}(\tau) = p_{ij}G_{ij}(\tau)$, where p_{ij}, $G_{ij}(\tau)$ – are probability and probability distribution function of FSP transition time in a state *i*, directly to the state *j*.

Each of the criteria E_{af}, E_{ta} (in case of IP protection of typical SIP), *E* (in case of a reference ADPS) is the probability of reaching a timely corresponding FSP absorbing state. In this way, the dynamic criteria are formalized as temporal and probable characteristics (TPC) of service operation of CA information processed in ADPS. The starting basis for the investigation of such TPC and lifetimes of FSP is in general case, the system of TPC dynamics that in original looks like:

$$Q_i(\tau) = H_{in}(\tau) + \sum_{j=1, j\neq i}^{n-1} \int_0^{\tau} H_{ij}(t) \cdot Q_j(\tau - t)dt, i = \overline{1,n-1}; \quad (10)$$

$$\begin{aligned} (I - \overline{H}(v))q(v) &= h(v), \\ (I - \overline{H}(0))\alpha &= h(0) \end{aligned}, \quad (11)$$

where:

I – identity matrix;

$\overline{H}(v) = \|h_{ij}(v)\|$,

$i = \overline{1,n-1}$,

$j = \overline{1,n-1}$;

$h(v) = (h_{in}(v))$,

$q(v) = (q_i(v))$,

$\alpha = q(0) = (\alpha_i)$,

$i = \overline{1,n-1}$;

$h_{ij}(v)$, $i = \overline{1,n-1}$, $j = \overline{1,n}$ – Laplace-Stieltjes transformation of function $H_{ij}(\tau)$;

α_i, $Q_i(\tau)$ – the probability of absorption FSP in state *i* at any time and less than τ, $q_i(v)$ – Laplace-Stieltjes transformation of function $Q_i(\tau)$.

Dependences (10) and (11) are obtained using semi-Markov matrix formalism for integrating the matrix formalism of finite Markov chains and operator formalism of random processes in a single review of continuous-time and discrete states.

The timeliness of the FSP absorption is determined by formulas:

$$\alpha = (I - \overline{H}(0))^{-1}h(0);$$
$$v_m = 1/\tau_m;$$
$$q(v_m) = (I - \overline{H}(v_m))^{-1}h(v_m);$$
$$E = q_1(v_m),$$

where τ_m – the average value of the exponential probability distribution of the FSP maximum lifetime.

There were also found the formulas for calculating the number of characteristics of the FSP lifetime. The proposed accurate analytical method requires small amounts of computation with no restrictions on the structure of the formalized network. Therefore, these models are more efficient than analytical and imitational, traditionally used in reliability theory of IP and other technical applications researching TPC systems.

The task of a making decision is formalized as a task of mathematical programming. You must select an alternative $a \in A$ from a quantity of alternatives *A* so, as to satisfy:

$$E_{af}(a) \to \max; \quad (12)$$

$$E_{ta}(a) \geq E_{\min ta}; \quad (13)$$

$$E_{fa}(a) \wedge E_{ra}(a) \wedge E_{fa}(a) \wedge E_{yu}(a) = 1, \quad (14)$$

where:

E_{minta} – defined according to the ADPS operational documentation constant;

a – alternative characterized by controlled service operation parameters of CA.

In the case of IP protection of typical SIP UA is used unique controlled parameter P_{kc} – the probability of launch of the service of CA in the next work session. For the reference ADPS managed parameters are multiple with different ways of their variation.

The procedures and the algorithms for optimal control of CA service separately for a typical SIP UA and the reference ADPS by estimated quality criteria for its operation, allowing us to find a compromise between ensuring the integrity and the efficiency of information processing are developed. To estimate the current values of the input variables in the evaluation criteria is intended the quality control subsystem of CA service operation. The calculations are performed by well-known formulas of mathematical statistics processing provided by recording and reporting subsystem of statistical data. According to the results of optimization of controlled parameters is generated a control action by throw-in sensor uniformly distributed on the interval [0, 1] random numbers, making forecast difficult to the attacker. Thus, depending on the return sensor values, the values of the parameters of the next launch of the CA service are generated. For the reference ADPS they are determined like which part of controlled information will be checked for immutability, and in case of IP protection of typical SIP UA is only determined whether to launch service of CA or not.

The results of the application of models of invulnerable circulation of information technology to the standard database managed by the reference object-DBMS, evidence of wide abilities of these models to ensure the availability and confidentiality of information processed in prospective ADPS CA (Smirniy M. & Lahno V., 2009).

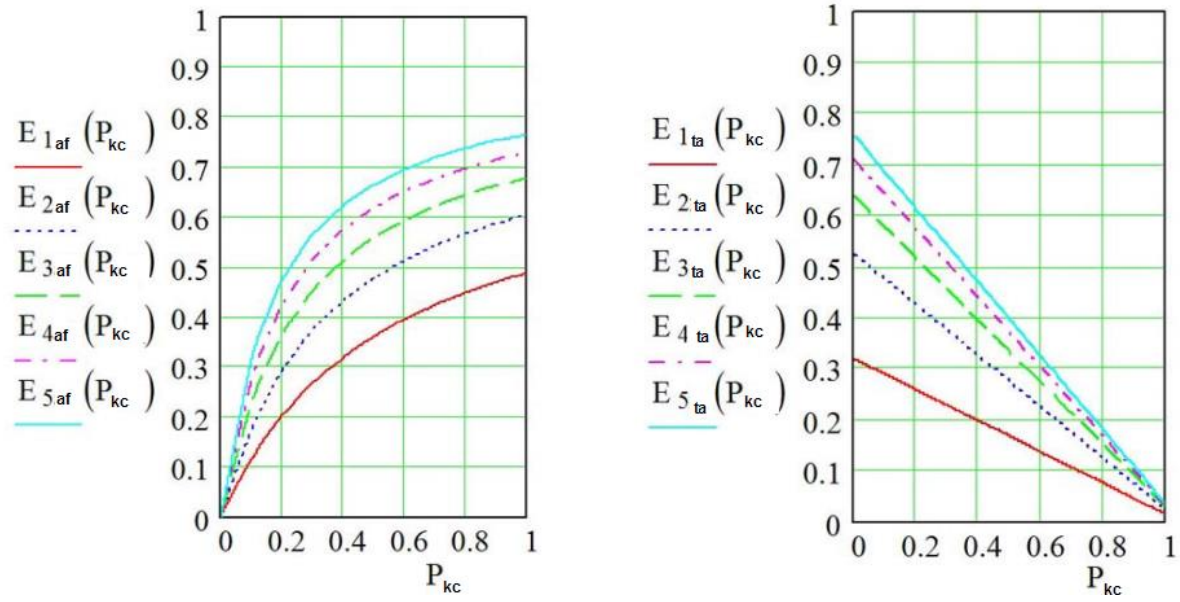
In order to strengthen the protection of information resources the enterprise managers are invited to use a continuous adjustment of profiles of active users, in particular, the so-called iterative algorithm (IA). The meaning of the iterative algorithm is in implicit feedback of server with a user, implemented through the request statistics registration. The obtained evaluation of the current user profile is used to rank the users into groups according to the degree of danger for IP resources: a) user, b) potentially dangerous user, c) dangerous user, d) the offender. For the synthesis of the automatic classification a discrete procedures unit of recognition of threats and vulnerability, described in detail in works (Lahno V. & Petrov A., 2010-2011), is applied.

4. THE SIMULATION RESULTS OF THE ADPS

With the help of the developed software conducted a comprehensive study on the quality of functioning of a typical system to security information from unauthorized access by the example of "Spectrum-X», in relation to the operation of workstation-based computer into an automated data processing system (Figure 3).

In the DELPHI programming environment we created a complex of problem-oriented software for modeling service management of CA of information processed as in conventional so in reference ADPS. It, in particular, allows us to construct graphic dependences of dynamic criteria, regardless of the variable parameters. Using these graphics choosing the optimal values of the controlled parameters and evaluate the attainable level of targets is visualized.

Therefore, the construction and the research of these relationships represents a significant interest to the theoretical research of the patterns of CA service management, see Fig. 3.



a) b)

a) Dependence of the criterion E_{af} controlled parameter P_{kc};
b) Dependence of the criterion E_{ta} controlled parameter P_{kc}

Fig. 3. Results of calculations for a typical system of information security "Spectrum-X"

For a typical system of information protection (for example, *"Spectrum-X"*), the results of calculations presented in the form of dependency $\mathrm{E}_{\mathrm{iaf}}(P_{kc})$ and $\mathrm{E}_{\mathrm{ita}}(P_{kc})$, $i=\overline{1,5}$ criterion E_{af} and the criterion E_{ta} of the controlled parameter for different values of the other variable parameters. In Figure 3, the curves $\mathrm{E}_{\mathrm{iaf}}(P_{kc})$, $\mathrm{E}_{\mathrm{ita}}(P_{kc})$ different values of $\tau_{\mathrm{maf}}=3600\cdot(i+1)$ and $\tau_{\mathrm{mta}}=60\cdot i$, respectively, where τ_{maf}, τ_{mta} are the averages the maximum time between adjacent integrity checks and implementation of the system of protection of its functions. Any increase depending interpreted as an improvement (by this criterion) quality of service IC as a control object with the growth of the controlled parameter and decrease - as deteriorating.

5. CONCLUSIONS

Using the apparatus RMSAS networks and E-nets new mathematical models of flexible reliability, availability, confidentiality and integrity of information processed, allowing mathematically describe the mechanisms to ensure the availability and confidentiality of the information and take into account the quantitative requirements for data integrity in the management of the service of CA are offered.

Mathematical models and algorithms of optimal control of the integrity of information processed, while maintaining the effectiveness of this treatment, allowing us to find a compromise between ensuring the integrity and the efficiency of information processing are developed. Exact analytical method for evaluating and analysis of the complex criteria for assessing the quality service operation of CA of information uses semi-Markov matrix formalism, integrating matrix formalism of finite Markov chains and operator formalism of random processes in a single review of continuous-time and discrete states.

After completion of the entire previously mentioned stages one can start the work on forming the model of information threats for all the information resources of the enterprise on the basis of the derived classifiers. The initial data for simulation are classes of vulnerabilities, threats and attacks, and also multitudes of RMSAS attack realization means and categories (classes) of malefactors.

The problem of using proper characteristic functions was not considered in corpore within the bounds of this research, as there are different mathematical approaches to descriptions of characteristic functions, which can be found for each class of information attack targets. For example, the following methods are used for solving problems connected with simulating the speed of malicious software spreading, that is measuring the percentage of infected computers within the network:

1) models based on changed systems of differential equation, formulated in classic epidemiologic models;
2) models based on calculation of Hamiltonian path length in the part of the analogous graph, where spreading is still possible;
3) other.

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Received for publication: 08.01.2014
Revision received: 29.03.2014
Accepted for publication: 27.04.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Lahno, V. (2014, 07 15). Protection of information in critical application data processing systems. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 102-112. doi:10.12709/mest.02.02.02.11

*Style – **Chicago** Fifteenth Edition:*

Lahno, Valery. 2014. "Protection of information in critical application data processing systems." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 102-112. doi:10.12709/mest.02.02.02.11.

*Style – **GOST** Name Sort:*

Lahno Valery Protection of information in critical application data processing systems [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 102-112.

*Style – **Harvard** Anglia:*
Lahno, V., 2014. Protection of information in critical application data processing systems. *MEST Journal,* 15 07, 2(2), pp. 102-112.

Style – **ISO 690** Numerical Reference:
Protection of information in critical application data processing systems. **Lahno, Valery.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 102-112.

MEST Journal
DOI 10.12709/mest.02.02.02.12

INCORPORATING INTEGRATED APPROACH IN SECONDARY SCHOOL

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JEL category: **A21**

Abstract

Under considerations are topics related to the organizational planning and management of incorporating the integrated approach in the St. George Private Secondary School in Sofia, Bulgaria. As the theoretical base we step on the Altschuler's model but modified some parts of it according to the specifics of the educational management. E.g., we replaced the 2-dimensional antinomy matrix of the Altschuler's model by considering antinomies in higher dimensions. Another innovation is the processing matrix we designed to technologize the project-oriented initiatives. A new educational paradigm is offered in which the role and the place of the integrated approach is set up as a way to achieve the desired goal of the compulsory education – a competence of synthetic type. Several good practices are given to illustrate different perspectives of the entire process of establishing a new educational environment in St. George School. The key role of mathematics and informational technologies in these initiatives is justified. The integrated approach we announce here is coherent with the Bulgarian National Youth Strategy where the stream line is an integrated consideration of the global problems related to the young people. The authors' hope is that the described manegment schema could serve as model for regular educational practices not only in private schools but as a modus operandi to implement the National Youth Strategy onto the entire educational reform that is going on in Bulgaria.

Keywords: *project education, synthetic competence, integral approach, Altschuler's model*

1 INTRODUCTION

We determine the integrated approach in education as a way for mutual consideration of interdisciplinary topic via application of several subjects methodic that pursuit many-folded educational goal. Any particular methodic acts in its own domain and uses its own standards and evaluation. Students are urged to apply their knowledge and skills in new context and as a result they are expected to build a competence of synthetic type. Further we will give more details about the integrated approach and the competence of synthetic type. We consider the integrated education as a teaching-learning

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process in which the integrated approach is the main didactical tool.

The integrated approach in education stands on agenda every time when the educational goals include transfer of knowledge from the learning context to applications. It is plausible the Berryman's view point that *individuals do not predictably use knowledge learned in school in everyday practice, nor do they use everyday knowledge in school settings. Perhaps most importantly, learners do not predictably transfer learning across school subjects* [as quoted by (Wicklein, 1997, p. 73)]. We believe that the secondary school should provide opportunities for the students to check their knowledge and skills outward the particular school-subject context in some activities of mixed type. However, the Bulgarian (and perhaps not only the Bulgarian) secondary school does not face the social demand on applicable knowledge. The status quo is subject partition of the curriculum which produces analytical knowledge and specific skills with no connections between subjects or real-life situations. The knowledge partition in secondary school causes complex problem in knowledge transfer, which includes the classroom organization, teachers' qualification, system of evaluation etc. This is why this problem requires complex solution.

The integrated education has its roots deep in the history but also a solid ground in modern times. For instance, the mathematical methods were applied in studying harmony by Pythagoras; he associated with numbers even some abstract concepts as *justice* (Van der Waerden, 1968, p. 132). Integrated education was organized in Bulgaria by the Problem Group on Education in 80's of the last century. The *integral approach* (quite different than our integrated approach) was applied via common methodic for consideration of subjects like *Language and Mathematics* (Sendov & Novachkova, 1985). The outcomes of this education were hopeful but unfortunately the program was closed in the early 90's. Multidisciplinary approaches to integrate mathematics, science and technology education were introduced in several states in USA in the first half of the 90's and a lot of positive effects were registered (Wicklein & Schell, 1995). Similar program was held in Australia in the middle of the 90's and also significant improvement in reaching of the educational goals was reported (Venville, Malone, Wallace, & Rennie, 1998). The first decade of the new century gave more examples of good practices about implementation of integrated approach, mainly from the perspective of ICT enhanced teaching-learning (Faloon, 2010).

These experience (reported by a state institution or by a single teacher) did not help us very much to see the entire potential of the integrated approach for supporting educational process in our school: the states operate with more resources than a school and aims too wide target group; a single teacher or even a small group of teachers usually act in a narrow area, too limited to be representative for this style of teaching. So we decided to design our own plan for incorporating the integrated approach.

2 MOTIVATION AND METHOD

The new trends in Bulgarian secondary school education are focused on building competences. The European Commission stated a framework for the key competences in which it is said that:

> *Key competences represent a transferable, multifunctional package of knowledge, skills and attitudes* (KSA) *that all individuals need for personal fulfillment and development, inclusion and employment. These should have been developed by the end of compulsory school or training, and should act as a foundation for further learning as part of Lifelong Learning* (EC, 2013).

As we mentioned above the transferability and multifunctionality of the package KSA is difficult and even impossible to be accomplished outward the context of learning. Hence a new context should be designed to provide opportunity for the students to check and to upgrade their KSA. Platforms for new educational context could be the extracurricular activities as circles, competitions, contests etc. As a rule these activities are in the scope of a particular teacher who uses didactical resources close to her/his routine teaching which

causes just slightly reinforcement of the desired transferability and multifunctionality of KSA.

Our standing point is that a more effective way to build student's competence is to implement some interdisciplinary activities as a part of the entire educational process. This means to build a system of bridges between subjects, coherent with the curriculum, but going in areas which are close to some real life situations. Thus the integral approach appears to be the methodology for putting into practice our ideas.

The methodology we use is based on a model proposed by Altschuler in 1964. This model is designed for management of implementing an invention – algorithm of the innovation (Al'tshuller, 1964, p. 88). Here we follow the description of this method given in (Genev, 1992).

3 PRECONDITIONS FOR INTEGRATED APPROACH IN SECONDARY SCHOOL

The teaching-learning process in primary school is implicitly organized as integrated education – one teacher teaches all subjects using similar methodic in different branches. Often the teacher refers to examples from one area to support her/his teaching in topics of another area. It is only a small step needed to go from this teaching style to the integrated approach. However, the explicit application of the integrated approach requires specific didactics (Martynova, 2003).

The picture dramatically changes in the first grade of the secondary school (in Bulgaria – the 5th grade). E.g., the apple which was just a fruit in primary school becomes a shape in geometry, a body in physics, organic conglomerate in chemistry etc. Such defragmentation of the objects goes along with a considerable increase of the number of concepts: the total number of mathematical objects that appear in entire primary school curriculum does not exceed two dozen but only the ones in the fifth grade are more than hundred. Often students cannot recognize the same characteristics or models in different subjects. E.g., recently a colleague who teaches both mathematics and physics observed that the skills in performing algebraic expressions are not applicable in solving physics problems. Similar observations in opposite direction were made by mathematics teachers who try to use examples from music to support studying fractions – students cannot apply their knowledge in music notation in math problems.

The examples given above clearly show the necessity of bridges for transfer of KSA from one context to another. However it is risky for a single teacher to take the whole responsibility of organizing interdisciplinary education. For instance, the attempt to study the calendars during the lessons in history presented a narrow view on the topic and deprived the students going deeper in the matter because of specific mathematics and astronomy which lay in the ground of any calendar design. On the contrary, the teams of teachers manage to connect successfully quite distant topics as usage of letters in some alphabets for writing numbers.

Summarizing this section we point on two important needs to be satisfied in the beginning of the secondary school:

- to keep the big picture of the world as united as possible;
- to form equips of professionals who can carry out the interdisciplinary education.

Our view point is that if these two needs are met successfully than the educational process will be continuous and the package of KSA can be turned into competences more smoothly. In such a way we fulfill the first stage of the Altschuler's model – clarifying the problem. Here we skip the details about the second stage which refers to the specification of the required resources.

4 NEXT ELEMENTS OF THE ORGANIZATIONAL PROJECTING

The third stage of the Altschuler's model is Analysis. The desired output should be determined in this stage, as well as the factors which stand on the way this output to be obtained in full scale. Our new paradigm locates the integrated education as an upgrade to the traditional classroom style, i.e. the project-oriented forms are auxiliary to the traditional ones. However, our expectations are bigger. We see the outcome decomposed in three directions:

- For the students: to build the basis of a synthetic competence, relevant to their age, interest and abilities. This includes providing opportunities to any student to manifest his/her best in solving complex problems individually and in team work.
- For the teachers: to encourage their aspiration for innovative teaching and to support their professional growth. Also teachers are given chance to participate in conferences, they are urged to write articles being part of a team.
- For the administration: to have a closer look on the school problems and to be engaged in solving cases. This includes sharing the success but also the responsibility.

The eventual obstacles to obtain maximal positive effect can be diversified as well. This step in our plan refers to the fourth Altschuler's stage – operational. The original Altschuler's model includes a matrix of antinomies where the key factors are combined in pairs and the possible contradictions are described between elements of a pair (Genev, 1992, p. 206). Our experience shows that as a rule several factors are involved in a contradiction and the solution needs simultaneous consideration of all relations between them.

4.1 Example 1

Let us consider the interaction between the next three segments which are crucial for orchestrating integrated education:

- processing matrix design; the definitions of the concepts are given further in the text;
- individual educational trajectory planning;
- constituting groups with positive attitude.

The first two bullets refer to methodic and administrative area and the third one seems to be pedagogical. It is difficult to find solution to any of them separately. On the contrary, they found more than satisfactory solution when they are considered simultaneously in a particular initiative, included in the general annual schedule: the processing matrix of the project-oriented initiative is designed keeping in mind the specifics of any individual trajectory; the individual educational trajectory of a particular student is planned taking into account the other members of the team and the requirements stated in the processing matrix; the groups of students with positive attitude are formed with respect to the individual educational trajectory and the type of the initiative.

The above example shows that the 2-dimensional matrix of antinomies is better to be replaced by at least 3-dimensional one. It is impossible in practice to compose such multi dimensional matrix, so we decided to consider any antinomy by itself. The approach we adopted was to separate the eventual antinomies in two areas of responsibility: general and particular. Problems as the theoretical frame (including school strategy), the annual plan (including time schedule and human resources) are of general type and the antinomies that appear are in the scope of the school decision-makers. The problems which appear during management of a particular initiative are in the competency of the staff responsible for it: teachers, class master, technical staff etc. Some antinomies of particular type due to more general problems (like the ones in the Example 1) were solved during the regular meetings of the crew. Such schema does not look very technological but it is flexible and it worked. It allows realizing the entire complex of recommendations in the fourth Altschuller's stage which are related to the possible changes in the school ecology, i.e. the interaction between traditional style of teaching-learning and the individuals, involved in the integrated education.

The final stage in the Altschuler's model – synthesis, requires estimating the effect of the integrated education on all affected structures, regulations, population. On this step of the organizational projecting we developed and applied a control system relevant to the entire teaching-learning process. The next example will give an idea of the control types we applied on the students' individual educational trajectories.

4.2 Example 2

The initiative ***Music equations*** took place in 2010/2011 scholastic year with students of 5th grade. This was a project-oriented interdisciplinary initiative which includes topics in mathematics, music and informatics. Students were separated in teams of three persons each. Any team was given a set of problems which includes a part of a

musical score (Figure 1). Students were expected to solve first problems individually, but the communications inside the team was allowed. A kind of mutual control was realized during the discussions between the team members – the first level of control. A kind of self-control was done when the students compared the 'official' solutions with their own ones.



Fig.1.A task from the initiative Music equations.

The next level of control was performed by the math teacher when he checked the presented solutions – this was the first control on the individual educational trajectory. It included discussions and comments on the concepts acquisition, solution routine, writing style. The individual educational trajectories were corrected by giving recommendations, as well as by stating additional problems and challenges (when it was necessary).



Fig.2 Solution presented as a MuseScore applet.

An external control was done by the software *MuseScore* 1.2 (Figure 2) that students used for performing the musical score. The wrong mathematical solutions or incorrect input of the notes leaded to false melody. Such mistakes gave reasons for detailed discussion on the corresponding parts of the students' work.

The final control was done during the last lesson when the teams worked together. Additional information about the effect of the initiative *Music equations* was collected during the math tests of the general term schedule.

We cannot give an exact evaluation (in percentages) of the integrated education effectiveness but we have enough observations and qualitative assessments that form a positive big picture. The examples in the next section are to confirm such pronouncement.

5 GOOD PRACTICES

In this section we are going to clarify some parts of the organizational planning and management by two examples.

5.1 Example 3

The initiative ***Math that surrounds us*** takes place in the second term since 2010/2011 scholastic year (Severinova, Lazarov, & Olejnikova, 2011). It is directed to 5th and 6th grade students and integrated mathematics and informational technologies (which are two independent subjects in Bulgarian secondary school) to examine the KSA in a real-life context.

Students work individually or by pairs. Their task was to collect data from real-life sources (Figure 3), to form a data-base in electronic spread-sheets, to process the data (Figure 4) and to work out a computer presentation. Finally the students were expected to perform their presentations at a school conference.



Fig. 3. The data sources - the initiative Math that surrounds us.

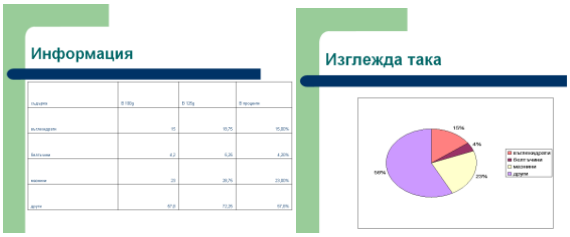


Fig. 4. Proceeding the data for the initiative ***Math that surrounds us****.*

This was the first project-oriented initiative held in St. George School where a *processing matrix* was put in practice. We designed it to technologize the entire process of planning, providing and performing the initiative goals, activities and results.

The processing matrix includes

- stating objectives, indicators of progress and benchmarks;
- selection of educational content, that is to be examined;
- schedule and methodic for didactical support of the students;
- methodic for data collecting and processing the data collected;
- template for presenting information and frame for presentation design;
- assessment system;
- providing resources and organizing a school conference;
- analyzing the outcomes of the initiative and drawing conclusions.

The processing matrix allows reconsidering the KSA which are build in the traditional curriculum topics through the perspective of their potential application in a new context. Some antinomies related to the synchronization of the time, assessment, didactic instruments etc. find solutions in the processing matrix. Its proper design allows obtaining synergetic effect from the initiative, i.e. the resulting effect of the integrated education is bigger than the effect of the expected one of any subject if it acts separately.

The human resources are another key factor in the management of our strategy to incorporate integrated education.

5.2 Example 4

The initiative ***Letters and numbers*** started in 2011/2012 scholastic year for 5th grade students (Severinova, Lazarov, & Nenov, 2012). This initiative integrates mathematics and literature, including also elements of history education. The initial team of teachers was extended in 2012/2013 scholastic year forming a *group with positive attitude* to the integrated education. The essence of such group is the spirit of collaboration and partnership. Teachers, administration and the executive director of the school are involved in a general plan giving their best not only in creating a new educational environment for the students but also a new professional environment for the teachers. The teachers' activities went far beyond the routine work – they studied some existing theoretical findings but they put the theory into practice in their own way. It is not common in Bulgaria teachers to give talk at scientific conferences. This is why we find the participation of our teachers in such conferences (quite regular since 2011) as an indication of positive influence of the new educational environment onto their personal professional growth.

6 CONCLUDING REMARKS

The good practices of integrated education we gave here are not a flash in the pan but parts of the trend to modernize the education in St. George School – Sofia. As far as we know there is no other reported school strategy for integrated education in Bulgaria. This is why we cannot compare the outcomes of our practice with similar ones.

The management of incorporating innovative approaches we apply is based on the Altschuler's model which is originally oriented to some technical and technological matters and the solution of a problem is supposed to be long lasting. We clearly understand that the solutions we find are specific for the parameters of a particular class, period, staff etc. A very important factor is the ICT support of all initiatives we realized. Perhaps the next leap in the IT development will make another sense of the integrated approach (e.g. we do not exploit the smartphones as a didactical tool yet). However, the experience we capture today is very helpful to manage similar practices in the near future. Thus we believe that our strategy has its place in the modern education.

The Bulgarian National Yought Strategy (see http://mpes.government.bg/Documents/Documents/ Strategii/strategy_youth_2012-2020.pdf) determines an integrated consideration of the global problems related to the young people. The authors' hope is that the good practices we offer in the article could be turned into regular ones not only in private schools but as a reflection of the National strategy onto the entire educational reform that is going on in Bulgaria.

7 TERMINOLOGY NOTES

The *Altschuller's model* is also known as *TRIZ method* – the abriviation comes from the Russian *Teoriya Razresheniya Issledovateljskih Zadach.* See http://www.triz-journal.com/archives/what_is_triz/ (active in May 2014).

The *synthetic competence* is a personal and case dependent concept that means it depends on the age and the local-behavioral-environment (LBE) of the student. LBE is a complex socio-economical and cultural structure including:

- people related to the student's behavior (teachers, parents, classmates etc.);
- institutions that organize education and creative work (school, clubs etc.);
- events that provides opportunities to manifest the achievements (tournaments, conferences etc.);
- system of values that form the cultural context of the student (motivation factors, anticipation about the future professional realization etc.). (Lazarov, 2013)

So the synthetic competence represents a multifunctional package of KSA that are transferable into contexts which are different than the one of building the KSA. The synthetic competence includes also some common deductive abilities and communication skills. Implicitly this definition assumes the student has math and IT abilities on a level that gives to him/her self-confidence and comfort in his/hers LBE.

We adopt the definition of the concept of individual educational trajectory (IET) as given in (Lazarov, 2013). IET is an organizational frame and plan for realization of a medium term educational process that is coherent with the individual specifics of the learner and provides opportunities for the optimal development of his/hers creative potential.

The concept of IET refers to the educational microcosmos of the student which is immersed into the global educational environment. The design and implementation of the IET is a complex process that includes the following components:

- formation of an individual informational environment;
- individualization of the didactical resources, including selection of the individual (re)searching instruments;
- individualization of setting the educational goal, including flexible approach to achieve it;
- individualization of the learning temps, investigation activities, layout style;
- taking into account the individual reflexive abilities and self-organization aptitude in searching a synergetic effect.

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Received for publication: 08.01.2014
Revision received: 29.03.2014
Accepted for publication: 27.04.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Lazarov, B., & Severinova, D. (2014, 07 15). Incorporating integrated approach in secondary school. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 113-120. doi:10.12709/mest.02.02.02.12

*Style – **Chicago** Fifteenth Edition:*

Lazarov, Borislav, and Daniela Severinova. 2014. "Incorporating integrated approach in secondary school." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 113-120. doi:10.12709/mest.02.02.02.12.

*Style – **GOST** Name Sort:*

Lazarov Borislav and Severinova Daniela Incorporating integrated approach in secondary school [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 113-120.

*Style – **Harvard** Anglia:*

Lazarov, B. & Severinova, D., 2014. Incorporating integrated approach in secondary school. *MEST Journal,* 15 07, 2(2), pp. 113-120.

Style – **ISO 690** Numerical Reference:

Incorporating integrated approach in secondary school. **Lazarov, Borislav and Severinova, Daniela.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 113-120.

MEST Journal
DOI 10.12709/mest.02.02.02.13

SOCIAL INNOVATIONS IN THE ECONOMIC INTEGRATION PROCESS – SELECTED ASPECTS

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JEL category: **F02, F15, F36**

Abstract

The present-day stage of socio-economic development, on the one hand, encourages a strong economic integration of individual economies, but on the other, highlights the differences in economic, social and cultural potentials between countries and geographical territories (regions). One of essential conditions for achieving a high degree of convergence and cohesion is generating the background for a social change, which will result in releasing innovation, creativity and the ability to cooperate and compete. Modern-day economic development tends to concentrate on non-material resources including especially knowledge, technology and all varieties of innovations. The search for possibilities of meeting various social needs requires a certain combination of resources so that they are effectively used and competitive advantages are easily identified. A key issue is not only looking for the latest technological advances but also such social changes that will become a catalyst for development and will bring on positive effects in terms of an increase in society's well-being as well as contribute to solving many a social issue which are of interest to social politics. The following article touches upon the significance of social innovation for building up the basis for intensive socio-economic coordination (convergence) which takes territorial aspect into account. The following article touches upon the role of social innovations seen as a catalyst for social and economic change, which is supposed to favor achieving a high degree of economic convergence, in a gradual elimination of developmental differences.

Keywords: *social innovations, convergence, territory, globalization*

1 SOCIAL INNOVATIONS – TERRITORIAL PERSPECTIVE

The present-day stage of socio-economic development, on the one hand, encourages a strong economic integration of individual economies, but on the other, highlights the differences in economic, social and cultural potentials between countries and geographical territories (regions). In literature as well as in practical activities in the developmental politics, more and more frequently a territorial (regional) approach is being adopted. This raises a question on how similar specific regions are in terms of

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economic, social, special and cultural entities, and whether or not, it is possible to eliminate those differences and lay the foundations for a stable social development on an interregional and international scale. One of essential conditions for achieving a high degree of convergence and cohesion is generating the background for a social change, which will result in releasing innovation, creativity and the ability to cooperate and compete. The following article touches upon the significance of social innovation for building up the basis for intensive socio-economic coordination (convergence) which takes territorial aspect into account.

Modern-day economic development tends to concentrate on non-material resources including especially knowledge, technology and all varieties of innovations. The search for possibilities of meeting various social needs requires a certain combination of resources so that they are effectively used and competitive advantages are easily identified. A key issue is not only looking for the latest technological advances but also such social changes that will become a catalyst for development and will bring on positive effects in terms of an increase in society's well-being as well as contribute to solving many a social issue which are of interest to social politics.

Traditionally, the perception of innovation focused on its technical side. While on the subject of innovations, one thought mainly of new products, processes or technologies, less frequently of organization. These days' social innovations are more and more often perceived as a phenomenon or process which constitutes a total sum of social changes that are indicators of progress and modernization. These changes in a synergetic manner complete and interdepend on the process of technological changes. Social changes can give a new shape to labor market (including new forms of employment such as home office), can create new types of social bonds, e.g. generating social network society, and can streamline the processes of management and interpersonal communication. However, these changes can also lead to controversial social issues that interfere with human culture such as *in vitro* fertilization, homosexuality and manipulating human's biological sphere. The essence of innovation is inventiveness that promotes changes and progress, but it needs to be stressed that not every innovation brings benefits for human beings. That primarily depends on making man the focal point of the innovation process. As A. Nowakowska rightly states '(…) the need for inventing new concepts and innovative ideas requires more intellectual powers , wider knowledge and creativity. As in many evolutionary processes, here one can observe a self-driven, cumulative process of changes which eventually resulted in crediting knowledge and innovation with a reputation of an independent and elementary productive factor. Consequently, modern-day economy is called an economy based on knowledge, where 'soft' factors have become the main driving force behind the socio-economic development' (Nowakowska, 2011, p. 31). A prerequisite for innovation to take place is the existence of a knowledge of specific 'gravity', then one can speak of forming 'innovation environment'. Innovation environment, according to D. Maillat, is a territorial entity from which the innovation process stems. There must be a definite type of interaction between economic subjects, public authorities and social sphere, which brings about certain external results (Nowakowska, 2011). Characteristics of innovation environment include: specific territorial boundaries viewed as the effect of collective processes of interaction, learning and adaptation –a collective product of the socio-economic sphere along with its organizational structure which facilitates the circulation of knowledge around the social network system, institutional and individual forms of activity and social mobility; learning dynamics illustrated by abilities and willingness on the part of all participants of the development process to make rapid changes and react to environmental dynamics and, consequently, suitably adjust their own actions to those requirements (Chadzynski, Nowakowska, & Przygodzki, 2008). Needless to say, a crucial background as well as a generator of all sorts of innovation are growing globalization processes. Globalization itself can be described as: 'an ongoing long-term process of integration between an increasing number of national economies regardless of their borders, which takes place thanks to expanding and intensifying mutual connections (in investment, production, trade and cooperation areas). As a result, a worldwide economic system is emerging. This system is characterized by significant interdependence and

considerable repercussions affecting even faraway countries. While describing the phenomenon of globalization, it is necessary to highlight the significance of liberalization of the world's economy, strengthening international connections, facilitation in the exchange of goods, services, capital, and technology and decreasing freight costs (Chmielewski, Lazniewska, & Nowak, 2012). It must also be mentioned that the liberalization of economy brings about certain social costs that could be called 'modernization costs' or 'adaptation costs'. Globalization not only enforced innovation processes, but also led to re-defining a nation-state into the one that fulfils a variety of social functions.

In his book *Authority and Counter-Authority in a Global Era. New Economy of International Global Politics* Ulrich Beck presents the diagnosis of the nation-state, the rationale behind its enfeeblement and the state's transformations. He states 'in a cosmopolitan constellation, the old nation-state transforms into the competitive market neo-liberal state, where politics follows the logic of capital (…) The likelihood of conversion of the nation-state into the neo-liberal state increases along with imposing some discipline on the state according to the rules of global economy, which bears some resemblance to the taming with a whip-like threat of credit refusal by IMF' (Beck, 2005, p. 325). A remedy for 'the world's maladies' is supposed to be, as the mainstream world's politics suggests, even more market economy and private capital which, while aiming for maximal effectiveness and productivity, will solve problems and dilemmas of ineffective and bureaucratic national mechanisms. Hence, the inefficient 'machine of state' is to be replaced by 'a perfect machine' of trans-national capital'. Such simplistic schemes meet with strong objections of (among others) Ulrich Beck who states '(…) the neo-liberal state is a perfect example of internationalization of the nation-state. Rigidly sticking to the neo-liberal *credo* (but not renouncing the nationalistic rhetoric), reformers and modernizers not only build the partition of the welfare or protective state, but also concur to the self-internationalization of the nation-state. In essence, it is the national autism that creates the necessary conditions for the state to make as a principle of its actions a three-fold rule: deregulation, liberalization and privatization, which makes fundamental reconstruction happen behind the now-empty pretense of the nation-state. It is a textbook example of active self-disassembly taking place along with a strong emphasis being put on the fact that there are no alternatives to the actions subordinate to the logic of capital. […]Authorities assessing credit rating scrutinize if companies, countries and local communities behave 'appropriately', i.e. according to the rules of neo-liberal prudence. At the beginning of the 21st century the International Monetary Fund monitors at least one third of sovereign countries of the world.' (Beck, 2005, pp. 325-326) Speaking of the globalization and liberalization process one must point to the factors that contribute to the success or failure of particular territories and their inhabitants. Therefore, apart from areas of innovation, welfare and social development there are also areas of long-lasting economic backwardness with the deteriorated quality of life. Surely the human and social capital accumulated over a certain area acts as crucial stimulus to innovation (including social innovation) (See: Bourdieu (1986), Becker (1975), Bartoszek (2008), Karwinska (2008).

Innovation area or innovation environment ought to fulfil the following main characteristics (Chadzynski, Nowakowska, & Przygodzki, 2008):

- a spatial set, i.e. a geographic region with literally no boarders although representing a unity expressed in idiosyncratic identifiable behaviors
- a set of actors: entrepreneurs, research institutions, educational institutions, public authorities, qualified personnel, who should be characterized by decision-making independence and the ability to create social reality
- -specific material resources (firms, infrastructure), institutional resources together with abilities, culture and a set of rules,
- -the organizational logic (the capability to cooperate), which aims for the best use of commonly created resources by interdependent subjects willing to satisfy the needs of one another,
- the learning logic, a certain capacity to change, which depends on the ability of particular subjects to alter their behavior according to the transformation of market-

based, technological and informational environments.

Hence, there has to exist a phenomenon called innovation environment. A. Jewtuchowicz (2005) calls in this way the existence of common phenomena making a particular territory distinctive. "(...) the main criterion is two features essential for the existence of the environment, i.e. the ability to cooperate and the capability to learn. The ability to cooperate, demonstrated in the organizational logic, should be linked with the capacity for the competitive behavior.

The measure of the organizational logic is closeness and intensity of relations between actors, whereas the learning logic is expressed through the actors' ability to simultaneously modify their behaviors, depending on the internal changes in the system and also changes in their environment."

2 THE PROCESS OF ECONOMIC AND SOCIAL INTEGRATION (CONVERGENCE)

Economic convergence is a process of unification of economies of various states, regions or functional areas due to their substantial attributes. There is no unequivocal or generally accepted definition of convergence, one can only point to various aspects or characteristics that are prerequisite for the above-mentioned similarities. Consequently, one can speak of compatibility of economic growth, convergence of financial systems or markets, similarity of models of capitalism, standardization of lifestyles and models of consumption and homogeneity of governance styles in the public sector (public administration). Thus, there is no one -holistic approach to convergence in the countries compared (Jablonski, 2012). On account of integration of economic and social studies in the research on the nature of social changes and the processes taking place in the post-modern, era it is legitimate to distinguish a number of crucial spheres in human activity; each sphere serves a different purpose (Jablonski (2012, p. 13), Wozniak (2005, p. 173)):

- economic and consumption sphere, related to the level and structure of consumption, income and *per capita* productivity, country's economic maturity, well-established system of state institutions which guarantee individual's rights (property rights, the right to live, freedom, mobility and other)
- biological and natural sphere, which comprises biological conditions under which life exists, life expectancy, the quality of the environment
- intellectual sphere, reflected by the standards of knowledge (level and structure of country's education), technology (the advancement of Research and Development sector)
- spiritual and social sphere, including axiological system, well-established and recognized moral values, behavioral patterns, ethics and non-standard social norms
- political sphere.

"Convergence of the regulatory sphere in individual countries can be considered in the light of legal order and commonly recognized and acceptable norms, patterns, social, ethical, religious and familial values, which shape socio-economic processes. Consequently, this type of convergence can be understood as a process of countries becoming similar to one another in terms of functioning socio-economic institutions" (Jablonski, 2012, p. 16). The concept of convergence is described whereby a variety of indexes which come to use when global comparisons are made. The most popular index (measure) is GDP, but it mainly reflects the production volume, not the wealth itself and it fails to take social factors into account. For the sake of comparison, alternative measures of wealth have been suggested. They go further beyond market transaction value, including social development index (HDI), sex-related social development index (GDI) and poverty index (HPI). There also exist synthetic measures of wealth depended on economic sphere, which adjust the GDP value according to the level of costs resulting from the economic growth. This group of measures include above all: measure of economic wealth (MEW), measure of national net wealth (NNW) or general progress index (GPI). While on the subject of socio-economic development indexes, one should pay special attention to measures of institutional development in that country's institutional maturity and its ability to fulfil social functions are vital for the high standard of living of its citizens. The above-mentioned measures "reflect determinants

resulting from legitimized official market-economy institutions which enable national and foreign entrepreneurs to be active and increase economic wealth (Jablonski, 2012, p. 54)". In the light of economic wealth and institutional order, there are two significant measures: of economic freedom and of economic competitiveness. Achieving a high degree of institutional efficiency is dependent on two components: observing political rights and civil rights. Within political rights one can name three elementary measures: the election process (freedom and equality of the vote for the central authorities in the state), social participation (determining the right to unite in socio-political parties, to form political opposition and to hold political views free from any pressure from totalitarian parties, religious hierarchy, military forces or other countries), fully operational central government (representatives elected in independent elections can freely shape the government policies, corruption levels, the open nature of operations, and trust that society put in their government. Civil rights are measured with four indexes: the index for freedom of speech and views (this index is made up from freedom and independence of the media, religious freedom, religious observances, education system free from any political influences, the index for the right to unite in associations and organizations (determining the right to gather, demonstrate and hold a debate in public, the right for free functioning of non-governmental organizations, trade unions and other organizations), the index for the legal rule (reflecting the independence and sovereignty of the courts of law, protection against political terror, unjustified and unlawful arrest and equality of all citizens before law and politics), the index for autonomy and individual rights (describes the equal opportunities and treatment of both sexes, the right to run one's own business and the extent to which the state is allowed to have control over its citizens' mobility, place of residence, employment and education (Jablonski, 2012).

3 CONCLUSIONS

Achieving a high degree of rapprochement between different territories in their socio-economic development, a high degree of convergence, requires, on the one hand, the existence of premises in an economic sphere, raising its innovativeness, efficiency and competitiveness, but on the other, it needs specific social changes which will lead to ICT society able to operate and think creatively. Modernizing the system of holding public power requires, in turn, introducing some elements of task-oriented public management which heavily relies on a cost-effectiveness principle. Creating the right atmosphere for the desired changes is subjected to the society that functions along with competition and trust rules and that is able to make a cooperation network and the society of high developmental potential which cumulates human and social capital in itself.

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Received for publication: 23.01.2014
Revision received: 27.05.2014
Accepted for publication: 23.06.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Szydlik-Leszczynska, A., & Leszczynski, M. (2014, 07 15). Social innovations in the economic integration process - selected aspects. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 121-126. doi:10.12709/mest.02.02.02.13

*Style – **Chicago** Fifteenth Edition:*

Szydlik-Leszczynska, Agata, and Marek Leszczynski. 2014. "Social innovations in the economic integration process - selected aspects." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 121-126. doi:10.12709/mest.02.02.02.13.

*Style – **GOST** Name Sort:*

Szydlik-Leszczynska Agata and Leszczynski Marek Social innovations in the economic integration process - selected aspects [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 121-126.

*Style – **Harvard** Anglia:*

Szydlik-Leszczynska, A. & Leszczynski, M., 2014. Social innovations in the economic integration process - selected aspects. *MEST Journal,* 15 07, 2(2), pp. 121-126.

Style – **ISO 690** Numerical Reference:

Social innovations in the economic integration process - selected aspects. **Szydlik-Leszczynska, Agata and Leszczynski, Marek.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 121-126.

MEST Journal
DOI 10.12709/mest.02.02.02.14

PROBLEMS OF SUSTAINABLE DEVELOPMENT OF AGRO-INDUSTRIAL COMPLEX OF UKRAINE IN THE CONTEMPORARY ECONOMY

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JEL category: **Q01, Q5, Q56**

Abstract

Modern tendencies, strategic principles and perspective ways of sustainable development of agro-industrial complex of Ukraine in the global environment on the basis of the analysis of its structural components state have been defined in the article. Some conceptual changes in the strategy of sustainable development of natural resources of Ukraine including land, water, mineral raw materials, forest resources, social component as well as in the sphere of organic products production according to conventional standards have been offered. Priority goals of sustainable development of agro-industrial complex and the role of the state in this have been defined.

This article describes the essence of the agro-industrial complex. Special features of the agro-industrial complex of Ukraine have been defined. The list of factors that influence the development of the agro-industrial complex of Ukraine is given. Indices of land resources per person have been determined. Wages of agricultural workers worldwide have been determined as well. The main function of sustainable development of agriculture in terms of production of organic foods has been defined. A list of public benefits that people receive from organic agriculture has been defined. The rate of growth in sales of organic food has been calculated. The reasons that prevent the spread of organic agriculture have been defined. The directions of sustainable land use as components of principles of sustainable society development as a whole have been defined. The systematic approach to land-use has been linked up with three components. The basic guidelines for sustainable land use have been defined as well as the basic elements of ecological

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and economic land management. We describe the elements of sustainable land use in the legal field, in the environmentally-economic and social spheres. The main priorities for sustainable water use, environmentally balanced water use in the system to ensure the sustainable development of Ukraine have been defined. The main tasks of economic regulation of market relations have been defined. The necessity of improving the legal framework for ensuring the rational use of natural resources has been grounded. The priority actions in the field of sustainable water use optimization have been defined. We describe the steps that are used to enhance the technological culture of production. The list of ways of water use regulation in the context of sustainable development has been given. Priorities of the national strategy for balanced forest resource development have been presented. Priority ways of ensuring sustainable development of the domestic mineral raw materials complex in the context of the long term have been offered. The main objectives of agricultural development based on the concept of sustainable development have been defined.

Keywords: *sustainable development, agro-industrial complex of Ukraine, resources, health food, balanced use of natur*

1. INTRODUCTION

Lately Ukrainian agriculture has reached a stable positive dynamics and it is increasing agricultural production more and more. The formation of the structure of production and the system of its organization in the process of land and agrarian reforms has been practically completed. Further development of the industry, which is one of the most important in the economy of Ukraine requires qualitative transformations to provide the increase of competitiveness of agricultural production and food security of the state.

The agro-industrial complex is an important component of the national economy of Ukraine and its regions but also has a lot of resources to improve the effectiveness of social and economic development of the country, the formation of its strong export potential and ensuring food security of the country. The quarter of basic means of production and working population are involved in the agro-industrial complex of the country, the fifth part of gross and gross value added output is produced. The domestic food market for more than two-thirds is formed by food and goods produced from agricultural raw materials. In times of market reforms in this important sector of the national economy market organization and legal structures based on private ownership of the land and property have been created; the attractiveness of investment and business activity have been increased; processes of integration into the global agro-food system have been activated.

2. ANALYSIS OF RECENT RESEARCH AND PUBLICATIONS

Problems of the sustainable agricultural growth in the context of the reform of the agricultural sector of Ukrainian economy has always been in the focus of national agrarian scientists. Important contribution for their solving as well as the study of specifics of development at the present-day stage has been made by Yu. D. Bilyk (2001), P. I. Handutskyy (2005), S. I. Dem'yanenko (2003), L. Y. Nowakowskyy (Novakovs"kyj, 2001), P. T. Sabluk (2006), A. M. Tretiak (2001), M. M. Fedorov (2007), V. V. Yurchishin (2007) and other scientists. Their research became the basis for realization of agricultural transformations and the formation of the system of sustainable agricultural growth. However, complexity and diversity of issues related to their realization in practice determine the need for further scientific research. First of all it is related to the fact that at the present stage there is a number of factors that were not considered previously by the Ukrainian researchers.

3. THE MAIN MATERIAL

The positive development of agro-industrial production is hampered by a number of serious problems that were inherited from the past, and those related to the lack of consistency in the implementation of reforms and some miscalculations in the choice of ways, means, methods and rates of change in agro-industrial complex and its individual components.

In particular, work in the agricultural sector is little prestige, the demographic situation in the villages continues to worsen: the total number and the specific weight of the rural population is decreasing, the number of people of retirement age increasing. As a result there is a further emigration of the village youth to cities and abroad.

In Ukrainian society there is not yet understanding of the special role of agriculture, the need to ensure the priority of its development, first of all as socially important sector.

Agricultural development is restrained by significant price disparities of agricultural products and products consumed in the industry. In comparison with 1990, the eight times disparity of prices has developed and it's not in favor of agriculture.

The monopoly at the market of agricultural raw materials is being saved. Processing companies often use prices which are not sufficient to provide profitable agricultural production.

Agriculture is a type of human activity, which leads to the most consumption of natural resources. The results of such activity usually are erosion of soils, exhaustion of water resources, loss of animal kingdom, agricultural chemical poisoning of soils, water and air contaminations (table 1). At the same time the growth of the number of population on the planet requires the increase of scales of food production .

Table 1. The basic indexes of wages and available land resource

Year	2009	2010	2011	2012
The area of agricultural land of farm enterprises, thousands ha	20864.4	20589.6	20499.3	20665.5
Per 1 person of a permanent population:				
forests and forest-covered area, ha	0.23	0.23	0.23	0.23
lands under water, ha	0.05	0.05	0.05	0.05
disturbed lands, m^2	0.33	0.26	0.26	0.26
waste lands, m^2	0.24	0.04	0.18	0.11
reclaimed land, m^2	0.20	0.11	0.13	0.15
Dynamics of average monthly wage in the CIS, U.S. $:				
Ukraine	238.9	282.2	330.5	378.5
Azerbaijan	371.1	413.0	459	504.1
Belarus	351.0	406.6	338.9	446.9
Armenia	267.8	274.7	290.2	302.1
Kazakhstan	451.3	526.6	614	677.9
Kyrgyzstan	142.3	156.4	201.8	231.8
Moldova	230.3	239.7	259.3	286.6
The Russian Federation	627.4	681.6	796.2	859.0

Source: (Vlasenko, 2013, p. 80)

It should be noted that the world food crisis became a new challenge for agricultural production. According to the World Bank the world food crisis led to the impoverishment of 100 million persons in countries with low incomes. According to the report of the UNO more than 40 countries around the world suffer from a lack of food in addition to a sharp rise in prices on food-stuffs. It is necessary to notice that this situation develops in the presence of fully sufficient world food production allowing to satisfy the necessities of a growing population of the planet. From the data of

the UNO organization from food and agriculture (FAO) there are around 800 million persons starving in the world. The experts of the organization consider that the main reason is an uneven distribution of products among countries and continents as a result of a fight for the control over natural resources which are coming to the end. (document A/42/427, 1987)

The main function of sustainable development in this context is providing the growing population with food-stuffs while preserving and restoring the natural environment. It is impossible to attain the state of a full food and material well-being, without providing the population with food-stuffs in volumes, sufficient for satisfaction requirements in food of full value. A production of ecologically clean and safe for health products plays a special role. Safety of food products and food raw materials belongs to basic factors which determine the health of population (and it is already a social component of sustainable development).

In such situation, the agrarian business becomes profitable in many countries, especially in Ukraine. However, experts also accent on the need to introduce measures for storage and protection of resources and the introduction of new balanced methods of agriculture, which includes an organic farming. In the broader context, an organic farming is a practical implementation of a general concept of "sustainable (environmentally and socially sustainable) development" in the sphere of agricultural production that meets the needs of the present without compromising the ability of future generations to meet their needs. It allows to coordinate and harmonize future economic, environmental and social objectives in agriculture. Its public goods include, in particular:

- Independence from industrial chemicals, reducing the energy intensity of agricultural production, a significant reduction in production costs and dependence on external financing;
- Environmental benefits – minimizing of the negative environmental impact through prevention of land degradation (erosion, acidity, salinity), the preservation and restoration of their natural fertility, stopping pollution of water basins and groundwater, cleaning of drinking water springs from toxic chemicals, reduction of greenhouse emissions and carbon binding;
- Preservation of biodiversity and the genetic bank of plants and animals, rejection of the dominance of monoculture, keeping animals in near-natural environment;
- The development of local, national and international markets for organic products, promotion of fair international trade;
- Increasing of the number of jobs in rural areas, new prospects for small farms and rural communities;
- Increasing of the autonomy and responsibility of farmers in managerial decision-making, promoting innovative agricultural research, enhancing the role of local knowledge and initiatives;
- Healthy, eco-friendly food products. (Pechchei, n.d.)

Today, organic agriculture is practiced in one hundred countries, and it is one of the most promising segments of an agricultural market. The growth rate of sales of organic food increased by 20-25% per year. The UK, Switzerland and Sweden are among the leaders who actively introduce and support organic agriculture.

However, the reasons preventing a wide spread of organic farming should also be noted (Gizatullin & Troitskii, 1998):

- Lack of support and recognition from government organizations (advisory services, agricultural schools, ministries and universities);
- Lack of information, especially on issues such as the organization of labor, market economy, economics and organization of production in ecological agriculture;
- Lack of training opportunities, especially in professional schools and colleges as well as slow development of consulting services;
- Slow development of the market for selling organic products.

Experts of the National Academy of Sciences of Ukraine identify a number of basic conditions and factors that contribute to Ukraine's transition to a sustainable agriculture. In particular a formal

accession of Ukraine into the United Nations framework document "Agenda 21", signing by Ukraine several international treaties that oblige the government to lead the country towards sustainable development are international prerequisites of such a transition. The internal factors include environmental, resource, social, demographic and social factors. (FAO, 2014)

It should be noted that despite the current difficulties, the field of organic agricultural production is developing rapidly. This theory follows the process of analyzing the survey of domestic scientists on the process of Ukraine's transition to sustainable development of agriculture. Ukraine has all the conditions for sustainable development of organic agricultural production. First, there is a fertile black soil in environmentally clean regions. Second, a low level of income of the rural population, in turn, causes small norms of fertilizers and pesticides use. Already there is a category of people (less than 5 %), mostly residents of large cities, who seek to consume organic products and who are willing to pay a large amount of money. This category of consumers creates a niche for the initial distribution of organic products in Ukraine. Also it creates favorable conditions for the release of products of this type on the international market. (Chlapak, 2004)

At the same time the resource potential of agriculture which is based on highly productive farm land and favorable agro-climatic conditions, has significant opportunities for its future development. There are additional opportunities to increase agricultural production, contribution of industry to increase the level of food and energy security, increase export potential of the country.

Directions of a sustainable land usage as components of sustainable development of society are not fully formed nowadays, so in terms of the land relations reform the following strategic principles must be strictly followed: a systematic approach to rationalization of land ownership and land usage, land protection , removal and prevention of the negative consequences of land degradation, the socio- economic interests of subjects of land relations, harmonization of the institutional framework of the environmental component of the land usage.

The systematic approach to the land usage is advisable to link with three components: economic (satisfying economic needs of landowners and land users, the nature of land use, location of production, the level of intensification of production, infrastructure development, etc.), social (social institutions of land use and land ownership, right of land ownership, easements, social infrastructure) and environmental (natural-resource potential, agro-environmental peculiarities of soil use, the quality of products, environmental condition of soil, environmental constraints).

Planning of sustainable land usage needs further grounding. It is built on a balance between environmental, economic and social objectives taking into account properties of the land, its value and characteristics of the usage on a particular area. Basic guidelines for sustainable land use should be: the balance between protection, conservation and development of land use , land use in terms of sustainable social development, the implementation of integrated government actions in the sphere of land relations related with public-private partnerships , international cooperation; defining the powers and duties of subjects of land relations, prevention and solving of land conflicts etc.

One of the regulators of the sustainable land usage is improvement in the management system that is based on the recognition of the land as the source of wealth. This management should include the land usage of the area and land management of farms, forming rational distribution of land between the branches of the economic complex and measures as for the efficient use and protection of land. The main elements of the system of ecological and economical land management should be: the state ecological expertise of projects of economic activity and assessment of their impact on the environment , the system of land, natural resource payments that create the conditions for the effective land usage; conservation of ecological potential and the environmental quality and value of natural objects and landscapes; environmental requirements and restrictions on the development of the most attractive investment areas , zoning and spatial planning of land use of different categories.

These areas of sustainable land usage should enter into the Concept of sustainable land usage. The purpose of this Concept should be defining and implementing of the main directions of state land policies in order to create an enabling environment for sustainable land usage in different categories. It will serve as a basis for the development of relevant legal acts and programs for a sustainable land management, coordination of agencies and local governments on land relations.

Sustainable land usage should include: completion of the agricultural land market and a legal support of an effective regulation of different land categories, warranty of public rights of land owners; optimization of land usage management and enforcement subjects of land relations provisions of the land laws, in ecological and economical - efficient use of natural resources and a strategic plan to ensure a food security of the country, introduction of innovative technologies in land usage and land investment related to its protection, respect for priority requirements of ecological safety of land usage and resource potential; realization of the ecological and economical land evaluation, in the social sphere - provision of a public access to land as a resource for human development, creation of an appropriate environment in which people live, provision the public with real opportunities to influence land relations. (Hajduc"kyj, 2005)

Many countries declare achieving optimal development options on water usage, but each of them has its own way to do it. Some countries have just found their way, others, such as USA, Japan, EU; have already embarked on the path of sustainable economic development. Many countries do not accept sustainable development as the first place because they set a strategic goal to survive. They provoke threats spreading to other countries and regions. A close proximity to various countries forms a threat of ecological disaster; and globalization, rapidly evolving, promotes the formation and intensification of the economic and social dangers. Water resources in their irrational usage and pollution can also cause damage to neighboring countries, falling from their regions. Therefore, achievement of a balance in social, environmental and economic interests of society associated with rational and eco balanced water usage is a priority of improvement of state regulation of the water use of Ukraine. The means of this component is to develop and implement coordinated and coherent legislative, regulatory, institutional, economic, environmental and industrial projects and activities to improve the quality of water resources, their sustainable and environmental usage, the implementation of the principle of integrated river basin and water management, balancing economic needs of the water resource and environmental features of water- resource potential.

Key priorities for sustainable water usage should focus on stimulating its rationalization and implementation of greening through water-clear, little- and waterless technology. Innovative character of institutional change should be based on a fundamental analysis of possible changes in the basis and superstructure water services to prevent ecological trends in water balance of the country and thereby deprive it of permanent impact on the pace and extent of involvement of the proportion of water resources in economic turnover.

The purpose of eco-balanced water usage in the system of sustainable development of Ukraine is to achieve a balance in environmental and economic interests of society associated with the usage of water resources, and to ensure the safety of the water in the area. Realization of this goal involves creating conditions for sustainable water usage in the following areas: establishing a sustainable regime (sustainable) usage of water resources and government regulation compliance of the regime by all entities , bringing the needs of water users in accordance with environmentally acceptable usage limits water resource potential, recovery of environmentally and economically viable due within previously disturbed and altered natural water bodies , ensuring the efficient and safe operation of water systems and facilities, planned to bring water management infrastructure in line with the objectives of public policy for sustainable water use, improve water management schemes and the use of water bodies, ensuring water security, the implementation methods of state regulation measures to prevent harmful effects of water

resources and water management facilities; systematic elimination of particularly hazardous industries and other objects which are potential sources of emergencies on water.

The main objectives of economic regulation of market relations for the rational usage of water, reducing the load on the aquatic environment, involvement and extra- budgetary funds for water protection activities should be:

- Deposit form function as well as the cost of water conservation works;
- Create a full withdrawal mechanism of water users' fees for the usage and pollution of water;
- Ensuring the transition in water system of rent payments;
- Full implementation of the "polluter pays" principle;
- Ensuring Depending fees for discharges of pollutants from the volume and level of danger to the environment and public health;
- Development of evidence-based methodology for determining the amount of compensation for damage caused to the aquatic environment and public health as a result of economic activity;
- The mechanisms of taxation and customs policies to stimulate the use of new energy-saving, waste technologies and environmentally friendly products;
- The creation of targeted funding sources to maintain the required water quality condition.

Improving the legal and regulatory framework together with a set of used types of payments should be directed to the formation of economic incentives for efficient water use, which will provide an environment that management structures and water users not only have the opportunity but would be interested in comparing the widest possible range of alternative technological methods of production and purification of waste water. To achieve this it is necessary by law to develop and approve the organizational structure and functional circuit implementation of basin management principle , to develop and adopt appropriate regulations to ensure the implementation of the principle of basin water management, water protection and reproduction of water resources, protection against harmful effects of water, a comprehensive geographic information system inventory information to the bank of a water fund , water resources and their management, territorial and sectoral structure of water services and water resources, water quality and other environmental-economic information , to develop normative and methodological base water management , and investment and functioning of the management structure in watersheds of major rivers .

Priority activities in the field of sustainable water use optimization should be:

- Sustainable water supply for different sectors of the economy and social sphere, taking into account environmental requirements in water bodies ;
- Prevent further depletion of water resources;
- Further implementation of basin management principle of water use;
- Prevention of hazardous natural and man-made phenomena and processes in the operation of water bodies;
- Improvement of the regulatory framework under the existence basin departments, including economic assessments of water use efficiency and its environmental performance.

The strategic goal of sustainable water use should be the maximum satisfaction of all users and consumers of water resources for their qualitative and quantitative characteristics while preserving not only the natural state of water bodies, but also other ecosystems associated with them, including land and forest resources.

Reducing anthropogenic pressures on water resources can be achieved by improving operational discipline and cultural production, introduction of new water-saving technologies, the implementation of water conservation measures, economic restructuring, and other innovations. Choosing the best option should be based on the results of a comprehensive environmental and economic analysis of alternatives. This analysis of alternative measures should be carried out after a detailed study of causation in water management systems that detect all objects common effect which leads to negative changes water resource potential, determining the share of each in shaping

the unfavorable condition of the aquatic environment and subsequent installation at the expert level list of possible measures aimed at reducing environmental stress.

In summary, it should be noted that the transfer of water management in Ukraine model of sustainable development is necessary to slow down the negative trends of water resources and accelerate innovation of the material and technical base of water.

As water resources play an important role in the social, economic and environmental development of the country, so in the future it is expected rather tense situation with water supply and public sectors of the economy, the primary measures must become sustainable use, protection of water resources, water saving her play.

The main areas of regulation of water use in the context of sustainable development include: improving public policy for rational use, conservation and development potential of water resource of Ukraine, organizational and economic mechanism, the modernization of the legal framework of water use, development of monitoring groundwater, attracting investment and financing of water management and water conservation measures, innovative industry development, scientific and technical support for water services.

Strategy for sustainable forestry development in the future should be established on a new basis. The basis of the national strategy for sustainable development must forest resource environmental and social priorities. This means that forest management will determine the behavior of the first social and environmental factors and national traditions. They imply that rock forest structure should not be due to purely economic parameters which is derived from the forest growing. This economic system has certain advantages, but it is inferior to environmental requirements.

So the processes should be defined primarily forest growing forest factors. Forest plantations should be closer to the maximum native stands, meeting environmental requirements. While this does not mean that economic factors are in the process of forest growing underestimated.

Woods is known to be the sensitive natural ecosystems, as interference with the processes of reproduction and use of forest resources should be considered, environmentally sound.

Policy of forest resources should be aimed at preserving the gene pool - virgin for the needs of present and future generations, the expansion of natural protected areas and tourist and recreational facilities for recreation and health of the population.

So the main directions of development of environmentally oriented forest resource state or region and forest management should be based on the concepts necessary attitude towards forest ecosystems as an important component of the environment, sustainable use of forest resources and sustainable development of the industry.

Openness of Ukraine Economy, the presence of globalization and integration for sustainable development of domestic mineral complex in the context of long term lead to the following tasks:

- Increase the economic role of the complex in the national economy and the creation of national multiplier effect (development of branches of the national economic complex associated with the use of mineral resources);
- Improving the economic efficiency of the production and use of mineral resources in an integrated production and use of innovative technologies at all stages (from exploration to the use of mineral waste man-made);
- Balancing the integrated development of domestic mineral resource base of the economy to provide all kinds of minerals mainly domestic production;
- Development and implementation of effective economic mechanism of domestic fund of mineral resources on the basis of rental income;
- Practical driving enforcement mechanism of geological prospecting mining companies that will provide the appropriate level of play of the mineral resource base;
- Monitoring the state of development of domestic mineral resource base through the use of geographic information technologies;
- Providing equity capital of the state of the domestic mining companies through the

purchase of shares of these companies' government agencies. Funds for the repurchase of shares shall accrue to the state payments for subsoil use from rental income. So the state shareholder rights delegated their representatives to the board of directors and management of mining companies and such controls the financial flows (provided by the Institute of strengthening the role of state regulation of subsoil);

- Formation in the subsoil of integrated regional industrial complexes and inter-sectoral corporate structure (primarily multinational corporations , now in Ukraine there is no institution TNCs) on the basis of their mineral complex;
- Optimization of volume expansion and diversification of sources of investment in extraction, consumption and conservation of mineral resources;
- Development of state regulation of export-import operations strategic for the economy Ukraine kinds of minerals;
- Adjustment of licensing and regulation regime subsoil.

Relevant tasks should be included into the perspective version of a government strategy of sustainable development of Ukraine.

The strategic direction and development trends of the social dimension of sustainable development focuses on the importance of maintaining the stability of existing social systems , including the prevention of destructive social conflicts through equitable distribution of wealth among people. The report of the UNDP "Sustainable development and equal opportunities : a better future for all" defines modern world strategic trends of sustainable development in the social sector and emphasizes the continuity of the relationship between sustainability and key issues of equal opportunities for productive employment, education and health. Environmental degradation increases inequality through adverse impacts on the physical and spiritual condition of people. Human development inequality magnifies an environmental degradation, particularly due to aborted in the community relevant moral and ethical guidelines. (UNDP, 2013)

In order to better use the potential of agriculture is creating favorable conditions, especially for:

- functioning on an equal economic basis of different legal forms of economy in the agricultural sector;
- Harmonization interests of owners, employees and village communities;
- Formation of competitive on the internal and external markets of industrial structures;
- Providing profitability 15 % is required for the production of expanded reproduction.

This is going to be achieved through continued reforms in the economy of the country and its agricultural sector in the direction of the optimal combination of industrial and agricultural production, submission of their activities to the needs of internal and external markets for agricultural products, social-economic village development, the transition from sectoral to territorial and self-management complex development of agro-industrial production and village development, the formation of an effective science and technology, budget, tax, financial, credit and price policies.

So strategic important is the development of agriculture based on the concept of sustainable development. The main goals in this area are:

- Increasing agricultural production to achieve food security, prove of consumption of food to science-based standards and essential increase of the volume of its exports.
- Increased production of organic products for the prevention ecological crisis, as a result of which worsened soil where cultivated crop production. They polluted with radionuclides, heavy metals, pesticides, chemicals that worsened the quality of agricultural products.
- Increasing of agricultural exports.
- Increasing profitability of agricultural production.
- Increasing productivity and payment in agriculture.

To achieve these goals must be made the following transformation:

- increasing of the productivity of crops and livestock;

- development of alternative energy sources in agriculture;
- providing profitability of agricultural production;
- ensure the balance of supply and demand in agriculture;
- completion of the land reform;
- development of economic forms and integration of production;
- development of the agricultural entrepreneurship and cooperation;
- technical and technological modernization of agro-industrial production;
- formation of favorable financial and credit environment;
- providing of investment changes in village areas;
- improving information and analytical support of developing the industry;
- reformation of management in agricultural sector;
- formation of effective system of providing innovation in agricultural production;
- development of village areas;
- development of the foreign economic activity.

This will provide food security of the country, production of high-quality agricultural products in quantities that meet the needs of the population and processing industries, and secure economic basis of social and economic development of the Ukrainian village.

4. CONCLUSIONS

The agricultural sector is one of the least profit industries in the world economy, so it can function stably and profitably even in favorable natural conditions only with big state support. Experience of state support for agriculture in Ukraine since independence shows that it was and still is aimed at solving current problems, prevent catastrophic situations.

Equivalence of relationship in the agricultural sector with other sectors is provided not only through the price mechanisms, but also budgetary financing (as determined priorities), foreign trade (in order to ensure adequate protection national producers and customers of food) and other factors. Duty of the state for agricultural producers is leveling benefits of industries serving agricultural production. In this case, the main instruments of economic regulation are: economic forecasting and programming; budget and tax system; monetary and exchange rate policy; science research to develop the technology of agricultural production and creating conditions for their development and implementation; conducting marketing research and development forecasts of production and marketing of the agricultural sector; customs policy and so on.

Role of the state in the formation and development of the agricultural market is effectively coordinate functioning of its components: realization of pricing policies based on market pricing mechanism complement of instruments of state regulation; activation of antimonopoly control over prices; output trade flows of the agricultural sector from the shadow turnover; establish a system of objective information on market conditions; especially on export conditions; completion of the formation of regulatory framework and monitoring and so on.

Increasing the role of the state in the development of agricultural production can be effective only if the improving the system of state regulation, which will allow to successfully solve the problem of positive dynamics and on this basis to ensure sustainable economic growth of the industry.

Therefore, traditional paradigm of development of economic for the leading guideline of effectiveness of economic to achieve high rates of economic growth, which is necessary condition for sustainable economic development. Duration of growth to confirm its stable trend rates must be not less than two decades.

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Received for publication: 02.02.2014
Revision received: 03.06.2014
Accepted for publication: 23.06.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Lypchuk, V., & Shuvar, B. (2014, 07 15). Problems of sustainable development of agro-industrial complex of Ukraine in the contemporary economy. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 127-138. doi:10.12709/mest.02.02.02.14

*Style – **Chicago** Fifteenth Edition:*

Lypchuk, Vasil, and Bohdan Shuvar. 2014. "Problems of sustainable development of agro-industrial complex of Ukraine in the contemporary economy." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 127-138. doi:10.12709/mest.02.02.02.14.

*Style – **GOST** Name Sort:*

Lypchuk Vasil and Shuvar Bohdan Problems of sustainable development of agro-industrial complex of Ukraine in the contemporary economy [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 127-138.

*Style – **Harvard** Anglia:*

Lypchuk, V. & Shuvar, B., 2014. Problems of sustainable development of agro-industrial complex of Ukraine in the contemporary economy. *MEST Journal,* 15 07, 2(2), pp. 127-138.

Style – **ISO 690** Numerical Reference:

Problems of sustainable development of agro-industrial complex of Ukraine in the contemporary economy. **Lypchuk, Vasil and Shuvar, Bohdan.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 127-138.

MEST Journal
DOI 10.12709/mest.02.02.02.15

CRITITAL INFRASTRUCTURE PROTECTION FROM THE VIEW OF TECHNICAL STANDARDS

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JEL category: **H54**

Abstract

Protection of critical infrastructure is an important issue of modern civilisation. Critical infrastructure systems include facilities and assets publicly or privately owned that are so vital that their destruction or incapacitation would disrupt the security, economy, safety, health, or welfare of the public. In the European conditions, they usually include from six to ten sectors. Transportation systems, energy and information networks belong to the very important sectors. At present, in the Slovak Republic, the attention is given especially to the sectors of transportation and energy. In the last years the researchers of the Faculty of Special Engineering of the University of Zilina participate in the research project focused on the issues of the critical infrastructure protection in transportation sector. There was also accredited study program Security and Protection of Critical Infrastructure for the bachelor and master degrees.
In the paper the authors are dealing with protection of critical infrastructure objects in the context of the technical standards. They include especially standards related to the risk management and quality management (ISO 31000:2009, ISO 9001:2008, ISO/IEC 27001). In the paper there are published partial results of the research oriented on the effect of implementation of the above mentioned standards on the situation in critical infrastructure protection.

Keywwords: *Critical infrastructure protection, ISO standards, security, risk management.*

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1 INTRODUCTION

Critical infrastructure protection (next CIP) is the phenomena of the last decade. After the attacks on the Twin Towers in New York on 11 September 2001, the legal rules for increasing protection and security of important entities – the critical infrastructure elements (next CI) were progessively developed (Act No. 45/2011, 2011).

Within the EU member states first the issues of objects identification and their including among the European critical infrastructure elements and national critical infrastructure elements were solved. Some countries specified also elements at the regional critical infrastructure level.

Enhancing protection of specified critical infrastructure elements was the next task. In this context various methods, metodologies and processes were defined (Dvořák, Soušek, Sventeková, Leitner, & Čižlák, 2010).

In regard to the scope of the issues and miscellaneousness of the critical infrastructure elements it is necessary to investigate the issues in detail within the specific branches. In last time the attention is concentrated especially on transport and energy sectors and information and communication technology (ICT) sector at the European and national levels (Voeller, 2005).

The researchers of the University of Zilina in cooperation with foreign colleagues are dealing with the issues of CIP very intensively. Since year 2011 they are solving project entitled Critical infrastructure protection in sector transportation supported by the Slovak Research and Development Agency. In years 2011-2013 also the project, entitled Integration of quality management and risk management, that brought new viewing angle on the solved issues, was solved at the University of Zilina. Since year 2014 the researchers of the University of Zilina will also participate in FP7 research project entitled Risk Analysis of Infrastructure Networks in response to extreme weather.

The aim of this paper is to present the results of the research in the field of critical infrastructure protection. The paper is also dealing with common issues of standards for quality assurance and risk management. Within application of the mentioned standards it is advisable to specify the fields where the respective standard will be implemented.

2 EXPERIENCE WITHIN USING METHODS DEALING WITH CRITICAL INFRASTRUCTURE RISK ASSESMENT

The whole risk management process in critical infrastructure consists of several partial activities. The first step, identification of hazard sources, is followed by risk analysis. Realization of these two basic activities requires selecting the most suitable methods. Identification of hazard sources can be done either by detailed statistical data for given system or expert evaluation. Risk analysis is a basic step in the risk assessment process. The basic classification of usable methods is given by the expression of values used in risk analysis as follows:

- qualitative,
- quantitative,
- semi-quantitative.

At the beginning risk analysis and assessment were connected with use of qualitative methods that generally assessed the subsystem with conclusion that some measures are needed to be accepted or not.

At present high degree of using information – communication technologies and expert systems development bring the need to use semi-quantitative and quantitative methods. These methods use broad knowledge basis, present expert systems enable so called data mining from other information systems and internet sources. So very detailed structured information sources are necessary for semi-quantitative assessment. Applying quantitative methods is often connected with problems of needed data absence. In that case the expert estimation is usually applied to assign required values.

2.1 Methods applicable for critical infrastructure risk assessment

There are many methods and techniques dealing with risk that are used almost in all spheres of human activity with effect. The attention is oriented especially on effort to affect existing risks and their impacts in economy, industry or other field. Risk

management is a systematic and logical method of determining the connections, identification, analysis, evaluation, treatment, monitoring and reporting risks connecting with any activity, function or process in such a way that organizations are able to minimize their losses and maximize opportunities (Sventeková & Dvořák, 2011).

In the Slovak Republic risk management is introduced and defined by standard STN ISO 31000 "Risk Management. Principles and Guidelines". In accordance with this standard, figure 1 presents the key steps of the risk management (STN ISO 31000:2011, 2011).

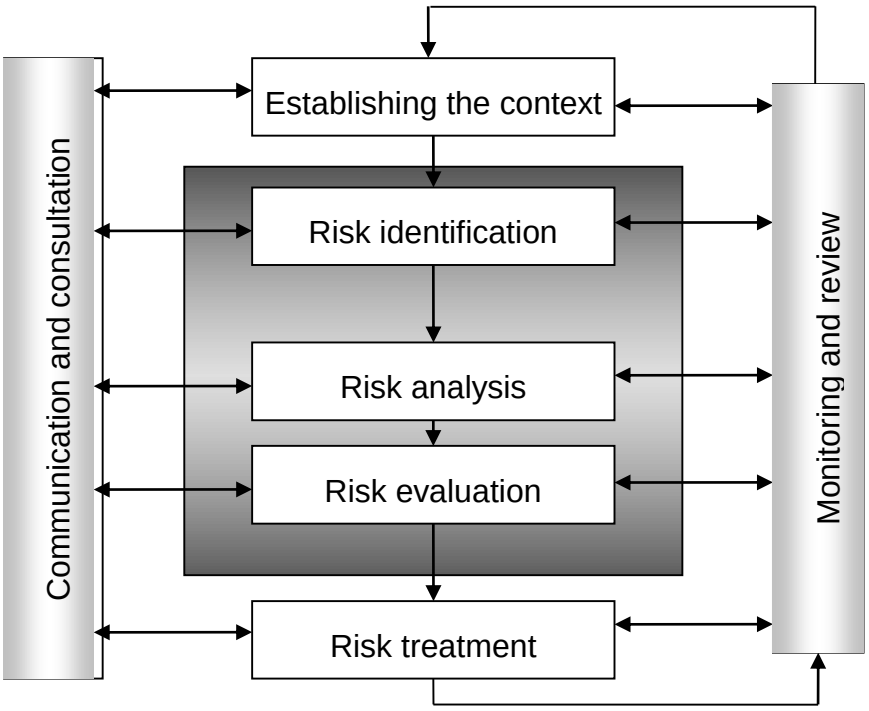


Fig. 1 Risk management key steps (STN ISO 31000:2011, 2011)

The single parts of standard STN ISO 31000 are necessary to be approximated into critical infrastructure protection.

In introduction the context should be established, that means defining those parts of the CI that will be the subject of investigation. Strategic and organization context and risk evaluation criterions should be defined, too.

Within the second step – risk identification – complex assessment of the CI threats is necessary to be done. Answers to questions what, how and why can happen are needed to be found.

Possible results with criterions defined in advance are compared within risk evaluation. Further the risk importance sequence is defined. Then assessing the risk acceptability is realized.

Within the risk treatment possible corrective measures are defined. It is necessary to evaluate their economic justness and possibilities of real implementation. Then to select and plan specific measures to be realized in proper sequence.

Communication and consultation as well as monitoring and review are feedback aimed at continuous enhancing risk management process. The whole risk analysis process depends especially on used methods. Appropriate methods should be used in all steps. Because the risk management is not strictly bound to certain system or activity, it can be used also for CI in combination with other needed and appropriate methodologies.

2.2 Selected methods of CI assessment

There are many methods dealing with risk assessment and the most widely known and used methods survey is published in „Review of 62 risk

analysis methodologies of industrial plants". Majority of methods given in Table 1 are derived from the most widely known and used methods. Single methods have different use, they provide different kinds of results and have different time and working demands (Tixier, Dusserre, Salvi, & Gaston, 2002).

Table 1 Survey of the basic and the most used traditional methods for risk assessment usable in CI

Method	Short
As Low As Reasonable Practicable/ Achievable	ALARP/ALARA
Hazard Analysis	HAZAN
Check List Analysis	CLA
Cause Consequence Analysis	CCA
Hazard Tree Analysis	HTA
Fault Tree Analysis	FTA
Event Tree Analysis	ETA
Failure Modes And Effects Analysis	FMEA
Safety Audit	SA
What if Analysis	WFA
Globalement Au Moins Aussi Bon	GAMAB
Human Reliability Assessment	HRA
Relative ranking / Hazard Indices	RR / HI
Routine Tests	RT
Rapid Ranking	RR
Hazard and Operability Study	HAZOP
Preliminary Hazard Analysis	PHA

ALARP ALARA (As Low As Reasonable Practicable / Achievable) – introduces the principle to lower the risk on such a level that is achievable (executable) in practice. The effort is concentrated on achieving the lowest risk value and in situations when the risk reduction on required level is not possible to achieve, this risk value can be accepted (but cannot be too high) if it is proved that this value is not able to be reduced by reasonable way. This principle is used especially in Great Britain. In the Slovak Republic this method is used in connection with radioactive materials

Hazard Analysis - HAZAN is one of the variants of the failure tree analysis. There is required to decide if it is necessary to do some changes to reduce this danger. The basic requirements for decision making are: frequency of failures occurrence and their probable consequences including acceptability criterions.

Check List Analysis – CLA uses check records of items or steps. Complete check list contain data "yes", "no", "is not suitable" and "other information are not needed". Check lists are often used to find out conformity between regulations and standards. This method is important as the way that enables to analyse important problems and compare them with in advance prepared record. It is also suitable for detecting the problems that already have arisen.

Cause Consequence Analysis – CCA is method integrating FTA and ETA analysis. Description of possible accident results is the result.

Hazard Tree Analysis - *HTA* - principle for assembly of hazard tree is selection of some general type of accident adequate for covering problems we want to solve. These accidents types are in detail categorized and present the opening stage in risk analysis.

Fault Tree Analysis - FTA is so called deductive method. This method is used for searching accidents or system failures and determining the causes of these negative events. Evaluation is

made by graphical model of system failures various combinations including human factor failures that can result in so called top event, i.e. principal system failure (accident).

Event Tree Analysis - ETA enables graphical presentation of possible accident results following from the initiatory events. The result is graphical and numerical presentation of possible accident scenario with quantity of failures and errors leading to top events, i.e. accident. The basis of this method is development of certain negative event through other affecting factors to result impact – accident.

Failure Modes and Effects Analysis - FMEA assess possible equipment failures and their impact on technological process at various levels. It is used for identification of failure kinds on single equipment and systems.

Failure Modes, Effects and Criticality Analysis – FMECA extends FMEA method. It includes characteristics of failure existence frequency or their probability.

Safety Audit – SA – this audit is understood in relation to existing operations and includes systematic and critical assessment of selected aspects of transport technology operation or single transport equipments. It presents inspection rounds that can have character from informal visual inspection to formally finding that takes more time. Assessment is made by team of people of various professions.

What if Analysis - WFA – the aim of security assurance by this method is identification of dangerous situations in technological process. With help of typical questions beginning with traditional „What happen if“ are detected causes for accidents and measures for increasing security are proposed. There can be expressed any objection concerning security and may not be expressed as question.

Human Reliability Assessment - HRA - the aim of this method is to identify possible human mistakes, their effect and reasons. It presents systematic evaluation of factors affecting the action of operators, technicians, maintenance men and other personnel in transport. It systematically names the mistakes that can occur in the course of standard operation of technologies or in emergencies.

*Relative Ranking/Hazard Indice*s means assessment of process seriousness on the base of physical-chemical properties of substances, technical-security parameters, their quantity, process thermodynamics and other characteristic events. These methods do not allow monitoring causal dependences cause and effect.

Rapid Ranking – RR enables rapid ranking of danger through inflammability, explosiveness and toxicity indexes. Inflammability and explosiveness indexes are determined on the base of material factor and degree of so called general and specific danger (risk sources) of process. Technological process or transport units are classified in one of three categories according to the resulting value of mentioned indexes.

Preliminary Hazard Analysis - PHA – this hazard analysis provides very quickly survey of operational hazards that can be start base for detailed analysis. This way can be also applied in early stage of planning when only very general purposes and technological schemes are to disposal.

The first step, selection of appropriate methodology, is the most important step for the complete risk assessment of the CI. Because not every method is usable for risk assessment in relation to CIP, selection of appropriate method is affected and conditioned especially by:

- results we want to achieve considering the reality that each methodology has its limitations,
- availability of needful information about examined system that are necessary for application of selected methodology.

2.3 Case study for railway risk assessment

Selection of methods depends on specific sector or subsector of CI. Within the above mentioned project we focused on subsector railway transport. The most often used methods for railway risk assessment are as follows:

- IAEA-TECDOC-727,
- CPR 18E - Purple Book,

- TRA,
- ARAMIS,
- Common Safety Method.

Method IAEA-TECDOC-727 presents so-called screening method that enables classification and determination of social risk sources priorities. This methods allows classification of danger from mobile sources (road, railway, water flows), completion of accidents consequences assessment with probability aspect based on historical data from accidents in the past.

Method according to the CPR 18E - Purple Book was elaborated and issued by TNO organization. It allows quantitative risk assessment for transportation of dangerous goods. The specific process of risk assessment for transportation of dangerous goods is second part of document CPR 18E-Purple Book and start from analysis of reports dealing with former accidents.

Method according to the Guideline for Chemical Transportation Risk Analysis - TRA elaborated by Center for Chemical Process Safety - American Institute of Chemical Engineers (AIChE). The security study elaborated according this methodology present risk measure in relation to transport operations of dangerous goods by qualitative, semi-quantitative or quantitative approach. In quantitative and semi-quantitative approaches are in principle used the same methods as in methodology Chemical Process Quantitative Risk Analysis – CPQRA.

Methodology Accidental Risk Assessment Methodology for Industries in the framework of the SEVESO II directive - ARAMIS uses two existing methods and principles for risk assessment. I tis based on created reference accidental scenarios according to:

- types of equipment,
- present dangerous substances,
- conditions of running processes.

This methodology was developed within research projects of the European Union. The risk assessment is based on assignment of risk measure through integration of three independent partial indexes:

- assessment of accidental scenarios importance, so called S-INDEX,
- assessment of effectivity of risk management, so called M-INDEX,
- assessment of vulnerability of the risk source environment, so called V-INDEX.

Experiece with application of various methods for CIP assessment lead to the future integration of these methods with some standards, detailed described in chapter 3.

3 INTEGRATION OF QUALITY AND RISK MANAGEMENT STANDARDS

At present many organizations have adopted or are adopting except ISO 9001 also other management system standards such as ISO 14001 Environmental management systems, ISO 31000 Risk management, ISO/IEC 27001 Information security management systems, ISO 22000 Food safety management systems, ISO/TS 16949 Particular requirements for the application of ISO 9001:2008 for automotive production and relevant service part organizations, OHSAS 18001 Occupational health and safety management systems and others. With respect to increasing pressure and requirements of their internal and external stakeholders, adopting several management systems have become a necessary condition of their existence and sustainability. However the integration process is not standardized and each organisation must find a way how the processes within the management systems can be best integrated to achieve significant integration benefits and meet business needs (Luskova, 2013).

Quality management and risk management belongs to the key factors of performant management. It can be said that the risk and quality are two sides of the same coin: quality is the measure of satisfying the requirements, and risk measures the weight of unfavorable situations, deviations from the requirements. These two dimensions are not mutually exclusive but complement each other, being components of the indicators system that measure the performance of the organization (Popescu & Dascălu, 2011).

Although in the ISO 9000 family of standards there is no specific reference to risk management, their philosophy is based on the principle of risk prevention. Analysis of these standards

demonstrates that they indirectly refer to risk management in many cases.

The ISO 9001:2008/Quality management systems. Requirements, for the first time explicitly emphasizes that the design and implementation of an organization's quality management system is influenced by its organizational environment, changes in that environment and the risks associated with that environment.

The ISO 9004:2009/Managing for the sustained success of an organization. A quality management approach, emphasizes that an organiazation's environment is ever changing and uncertain, and to achieve sustained success it is necessary for its management to identify associated short and long-term risks and deploy an overall strategy to mitigate them.

The risk approach method is also an integral part of the standards ISO 14001:2004/Environmental management systems. Requirements with guidance for use and OHSAS 18001:2007/Occupational health and safety management systems. Requirements. Organizations should identify and assess each of the risks they‘ve been faced. Infrequent risks with minor effects should be only controlled. Significant risks with severe consequences should be managed in such a way to eliminate them completely or reduce the frequency of their occurrence and severity of consequences (Avanesov, 2009).

Industry Quality Management Systems

In the world there are a lot of quality management systems for industry branches dealing with specific management systems. Requirements of these industry quality management systems are more demanding than the ISO 9000 family of standards requirements.

QS-9000 Quality System Requirements

The QS-9000 is an international quality management system standard for the automotive industry originally developed by and for the 'Big Three' of the American auto industry, namely, Daimler Chrysler Corporation, Ford Motor Company, and General Motors Corporation.
The main weakness of the QS-9000 is the fact that it is based on the ISO 9001:1994, which has been obsoleted and replaced by ISO 9001:2008 and so automotive companies are using the ISO/TS-16949 as the new standard for the automotive industry's quality management systems (SiliconFarEast.com, 2007).

VDA6 Verband Der Automobilindustrie/VDA Automotive standard

VDA is the German Association of the automotive industry that consists of about 600 member companies, who have come together to research and produce clean and safe auto-mobility for the future. The VDA 6.X regulations are designed for organizations in the automotive supply chain to provide a holistic quality management (VDA, 1999).

Upon introduction of the ISO 9000 in 1987, a VDA working group responsible for the standardization of technical norms recognized the necessity to integrate and adapt the general ISO standards to the particular context and environment of the automotive industry. The VDA quality management series VDA 6.X was introduced in 1991. Since August 1, 1997 the VDA quality standards are administered by the VDA Quality Management Centre that is responsible for the continuous update and translation of standards set by the ISO to the specific context of the German Automotive industry (Clarke, 2005).

ISO/TS 16949:2009

ISO/TS 16949 is the international quality management system standard for the automotive Industry based on ISO 9001. Subscribers to the standard include BMW, Chrysler, Daimler, Fiat, Ford, General Motors, PSA, Renault and Volkswagen. The introduction of TS 16949 has resulted in substantial improvements in all aspects of quality, delivery and overall efficiency throughout the supply chain and It has also reduced the requirement for multiple audits of manufacturers. This standard is applicable to any organisation within the automotive supply chain that manufactures and/or adds value to parts for supply to the automotive industry (NQA, 2013).

OHSAS 18001 Occupational Health And Safety Management Systems

OHSAS 18001:2007 are an Occupation Health and Safety Assessment Series for health and safety management systems. They are intended

to help organizations to control occupational health and safety risks. They were developed in response to widespread demand for a recognized standard against which to be certified and assessed. The OHSAS specification is applicable to any organisation (OHSAS 18001, 2007)

ISMS Information Security Management System

Information Security Management System (ISMS) is part of the overall management system, based on a business risk approach, to establish, implement, operate, monitor, review, maintain and improve information security. Requirements for Information Security Systems are set in the Information Security Standard, originally published by the British Standards Institution. The Standard is published in two parts:

- ISO/IEC 27001, Information Security Management Systems – Requirements,
- ISO/IEC 27002, Code of practice for Information Security Management (Risk Analysis Consultants, 2013).

AQAP Allied Quality Assurance Publication

AQAP Allied Quality Assurance Publication is the management system for suppliers to the military industry developed by the NATO. Organization that is interested in cooperation with NATO countries (especially military branch) has to have introduced specific standard to prove its ability to meet all its specific requirements.

The main NATO objective in quality management of supplies is to implement such a system where particular countries would be able to produce and supply a safe, reliable and economical product for military purposes. In order to achieve this objective all parties involved are responsible for the product quality. It refers to User, Purchaser, Supplier and Government Quality Assurance Supervising Staff throughout the life cycle of a product (ZSJZ, 2013).

NUSS Nuclear Safety Standards

The IAEA is the world's centre of cooperation in the nuclear field. It was set up as the world´s "Atoms for Peace" organization in 1957 within the United Nations family. The Agency works with its Member States and multiple partners worldwide to promote safe, secure and peaceful nuclear technologies (IAEA, About the IAEA, 2013).

Nuclear Safety Standards are dealing with all aspects of nuclear safety. The five Codes of Practice deal with the topics (IAEA, 2013):

- governmental organization for the regulation of nuclear power plants (NUSS-50-C-G),
- safety in nuclear power plant siting (NUSS-50-C-S),
- design for safety of nuclear power plants (NUSS-50-C-D),
- safety in nuclear power plant operation (NUSS-50-C-O),
- quality assurance for safety in nuclear power plants (NUSS-50-C-QA).

HACCP Hazard Analysis and Critical Control Points

HACCP is a process control system that identifies where food safety hazards may occur in a food production process and puts into place stringent controls to prevent the hazards from occurring. By strictly monitoring and controlling each step of the process, there is less chance for hazards to occur and in this way a food business is able to assure the safety of the food products they produce.
Effectively implemented HACCP controls biological, physical, chemical and allergen hazards within a food operation. HACCP can be implemented as a separate risk management system or as part of a certification to ISO 9000 (Standards.org, 2011).

4 CONCLUSION

In conclusion we would like to present some important conclusions and recommendations.

For the first we underline improving the vocabulary and its correspondence with international standards. Some fields of the research of the critical infrastructure protection specific elements are still not sufficiently solved also thanks to insufficient vocabulary. Recommendations in the field of standardization are one of the results of our research. Within our research we meet with different approaches to risk analysis and assessment in various fields.

Another important aspect is application of modern information – communication technologies (ICT) within the critical infrastructure protection. At present physical and object security and safety without ICT application is not possible. Except the

real attackers, who want to destroy the specific object, the great risk is represented also by internet attackers who want to take control of management and information systems.

Important aspect is also inspection of performing the measures defined by the laws and regulations. Every critical infrastructure element must have always elaborated security plan. Its implementation has to be checked and verified. In case realization of the protection is in accordance with security plan than the security level is evaluated as very well. In case the tasks of the security plan are not fulfilled, some activities are evaluated as insufficient and other corrective measures are needed.

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ACKNOWLEDGEMENT

This paper was supported by projects:

APVV 0471-10 *Critical Infrastructure Protection in Sector Transportation*

and

Innovation and internationalization of education – tools of quality enhancement of the Zilina University in the European Education Area. 2013-2015, CODE ITMS: 26110230079

Received for publication: 31.01.2014
Revision received: 23.05.2014
Accepted for publication: 23.06.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Luskova, M., Dvorak, Z., & Novak, L. (2014, 07 15). Critical infrastructure protection from the view of technical standards. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 139-148. doi:10.12709/mest.02.02.02.15

*Style – **Chicago** Fifteenth Edition:*

Luskova, Maria, Zdenek Dvorak, and Ladislav Novak. 2014. "Critical infrastructure protection from the view of technical standards." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 139-148. doi:10.12709/mest.02.02.02.15.

*Style – **GOST** Name Sort:*

Luskova Maria, Dvorak Zdenek and Novak Ladislav Critical infrastructure protection from the view of technical standards [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 139-148.

*Style – **Harvard** Anglia:*

Luskova, M., Dvorak, Z. & Novak, L., 2014. Critical infrastructure protection from the view of technical standards. *MEST Journal,* 15 07, 2(2), pp. 139-148.

Style – **ISO 690** Numerical Reference:

Critical infrastructure protection from the view of technical standards. **Luskova, Maria, Dvorak, Zdenek and Novak, Ladislav.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 139-148.

MEST Journal
DOI 10.12709/mest.02.02.02.16

THE IMPACT OF GLOBALIZATION ON THE EMERGENCE AND DEVELOPMENT OF CRISIS

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© MESTE NGO
JEL category: **A23, I23, L26**

Abstract

The causes and evolution of events and trends that determine the development of the crisis are analyzed in the article. In the article we determine that the management of competitiveness of socio-economic systems in the context of globalization is closely intertwined with the anti-crisis management, not only at the enterprise level, but also at the regional and national economies. It is established that under the conditions of global competition countering crises should be directed to ensure a quasi-crisis counter pressure. Globalization dialectically affects the frequency and degree of manifestation of the crisis in social and economic systems. On the one hand, due to the activities of international financial institutions countering crises is made in particular countries, but the impact of globalization on increasing and strengthening the manifestation of crises in social and economic systems of various ranks is much wider. The competition for resources between social and economic subsystems is one of the main blocks of contradictions. Mentioned subsystems are present in the socio-economic systems at all levels. In the terms of global competition the availability of resources reduction threats becomes of the most importance in the management of socio-economic systems. These resources are necessary for the system that brings to the fore a long-term (strategic) management horizon to ensure a minimum level of resources to deal with constant quasi-crisis pressure.

Keywords: *crisis, systemic crisis, socio-economic systems, anti-crisis management, quasi-crisis pressure, global competition, rank positions*

1 STATEMENT OF THE PROBLEM

To prevent and avoid negative scenarios of socio-economic systems development it is needed to understand clearly the causes of occurrence and development of events and trends which determine the evolution of the crises. To establish the causes of the crises it is necessary to determine the range of objects which are inherent in the crisis, to find out the nature of crisis, their types, and only then to find out common causes of various types of crises in different socio-economic systems.

First it is needed to determine in which socio-economic systems crises may arise: enterprise, regional or national economy, or the global economy as a whole.

Analysis of recent researches and publications. If we analyze the crisis in the socio-economic system of national ranking, the external factors for

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it will be negative or crisis phenomena in the global economic system. A. Halchynskiy (2009, p. 92) rightly points out that the national economy as a structural division of the world system is subordinated to its laws and specifics. After determining systems where crisis phenomena are possible, we can analyze their essence. Despite the considerable attention to the crises and crisis phenomena in recent years, their nature hasn't been clearly defined yet. There are many definitions of "crisis". V. Shpachuk (2010) presents nine definitions of "crisis" in social and economic systems of different ranks, G. Buslajeva (2007) presents 15 definitions. A large number of approaches to the essence of the notion "crisis" are presented.

The aim of the article is to analyze the crisis in socio-economic systems of different levels in the context of globalization.

2 ANALYSIS

It should be mentioned that not enough attention is paid in the literature to the specifying of contradictions, imbalance between which, is resulted in the crisis, but the same time determines the evolution (development) of socio-economic systems. After reviewing the scientific literature on the problems and contradictions of the crisis development in socio-economic systems (Oleshko, 2010), we consider that it is logically to distinguish between three main blocks of dialectical contradictions in socio-economic systems, imbalance between which, is resulted in the development of crises phenomena (fig.1)

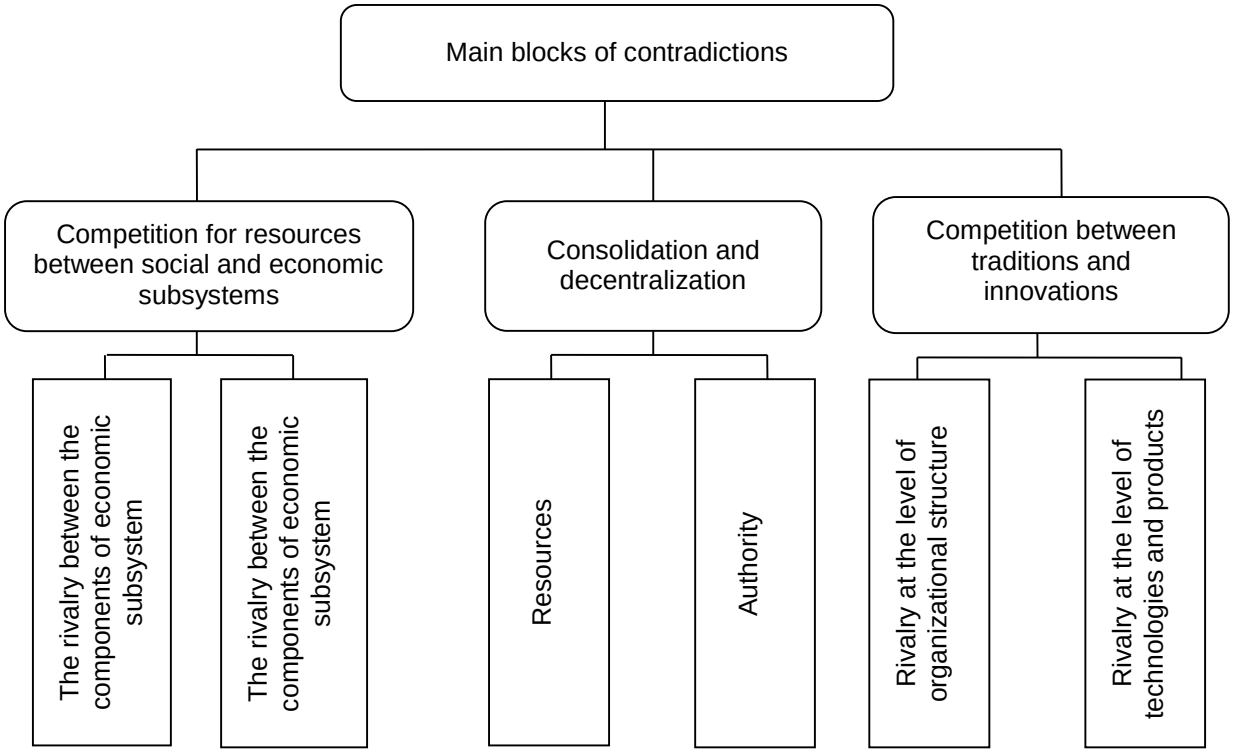


Figure 1. The main blocks of dialectical contradictions in social and economic systems. Source: developed by the author

One of the main blocks of contradictions in social and economic systems of different ranks is the competition for resources between social and economic subsystems. Mentioned subsystems are presented in the socio-economic systems at all levels. Subjects of control permanently solve the dilemma: to increase support for the economy of the country or the budget expenses for social needs (at the level of the national economy), or to spend the extra income on the extension (upgrades) of the production or to stimulate the staff (at the company level). The placement and maintaining of the balance in the allocation of resources is challenging task and is associated with the competition, while to meet the needs for resources of subsystems, the resources given in competitive rivalry are needed. While analyzing international competitiveness of the national economy L. Antonjuk (2004, p. 12) emphasizes that it should provide both "the implementation of

national interests for the sake of economic security" (to provide national economy with resources) and "high living standards" (to provide social subsystem with resources). Accordingly, competition for resources may occur between the individual components of subsystems: branches, divisions, enterprises, etc.

The second block of contradictions is consolidation and decentralization. Each socio-economic system has a struggle and balance between mentioned contradictions: from the global economic system to the enterprise.

The third block of contradictions is the rivalry between "new" and "old". J. Shumpeter (2008, p. 389) noted that no new "grows with the old, but it is next to it, then displacing it".

The socio-economic system of any rank from the enterprise to the global economy is dynamic. Its condition at a definite point of time differs from the previous and will differ from the future condition. Certain area of the set of all possible states of the socio-economic system is considered to be "normal", and the other – "crisis". Splitting of the sets of system states into "acceptable" (normal) conditions and the conditions which are interpreted as negative is usually done from the position of its development (Fomina & Pryxod'ko, 2012). The basis assumption, as has already been mentioned, is the availability in each system dialectically connected to opposite processes. Then the "normal", or safe condition of a system can be logically defined as the one in which there is a balance of the mentioned pairs of processes. M. Fomina and V. Pruhodko states that such a balance balances destruction and renewal, decay and combination, separation and integration in the frames of the system (Fomina & Pryxod'ko, 2012, p. 436), and thus ensures its existence and dynamics as a whole. If the balance of opposites is broken in the system, so its state is considered to be negative, and in the case of major violations it is considered to be crisis.

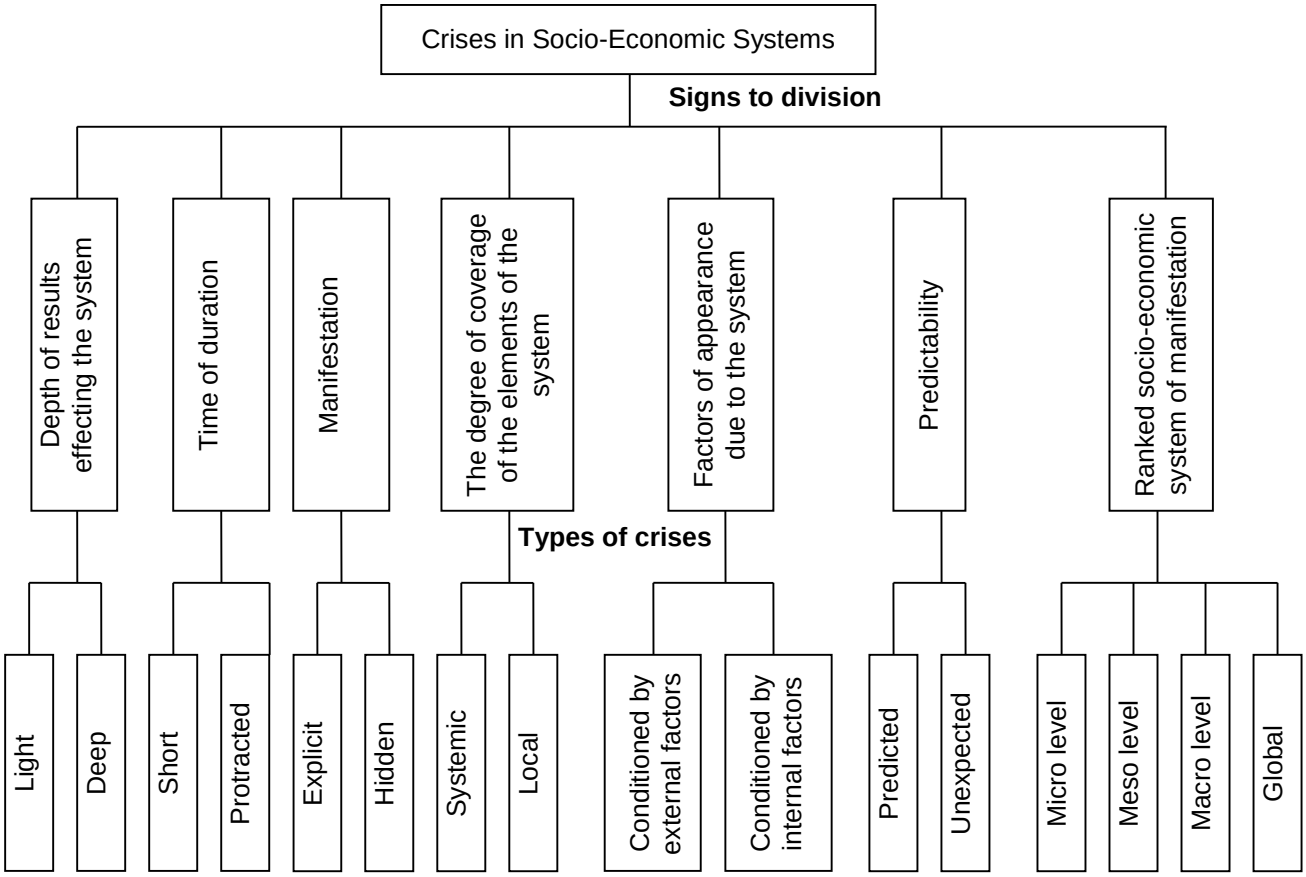


Figure 2. Classification of crisis in socio-economic systems.
Source: developed by the author based on (Slizkova, 2012)

Therefore, it's more logically to believe that the intensification of contradictions in the system leads to crisis phenomena, that could escalate to crisis (the system enters to a new state), but they may be liquidated due to certain influences (internal and external) and the system will continue to function in the same state or condition. So, we'll understand under the term "crisis" crisis phenomena because it's impossible to distinguish whether the crisis phenomena is really a crisis or if they are removed without switching to a new state.

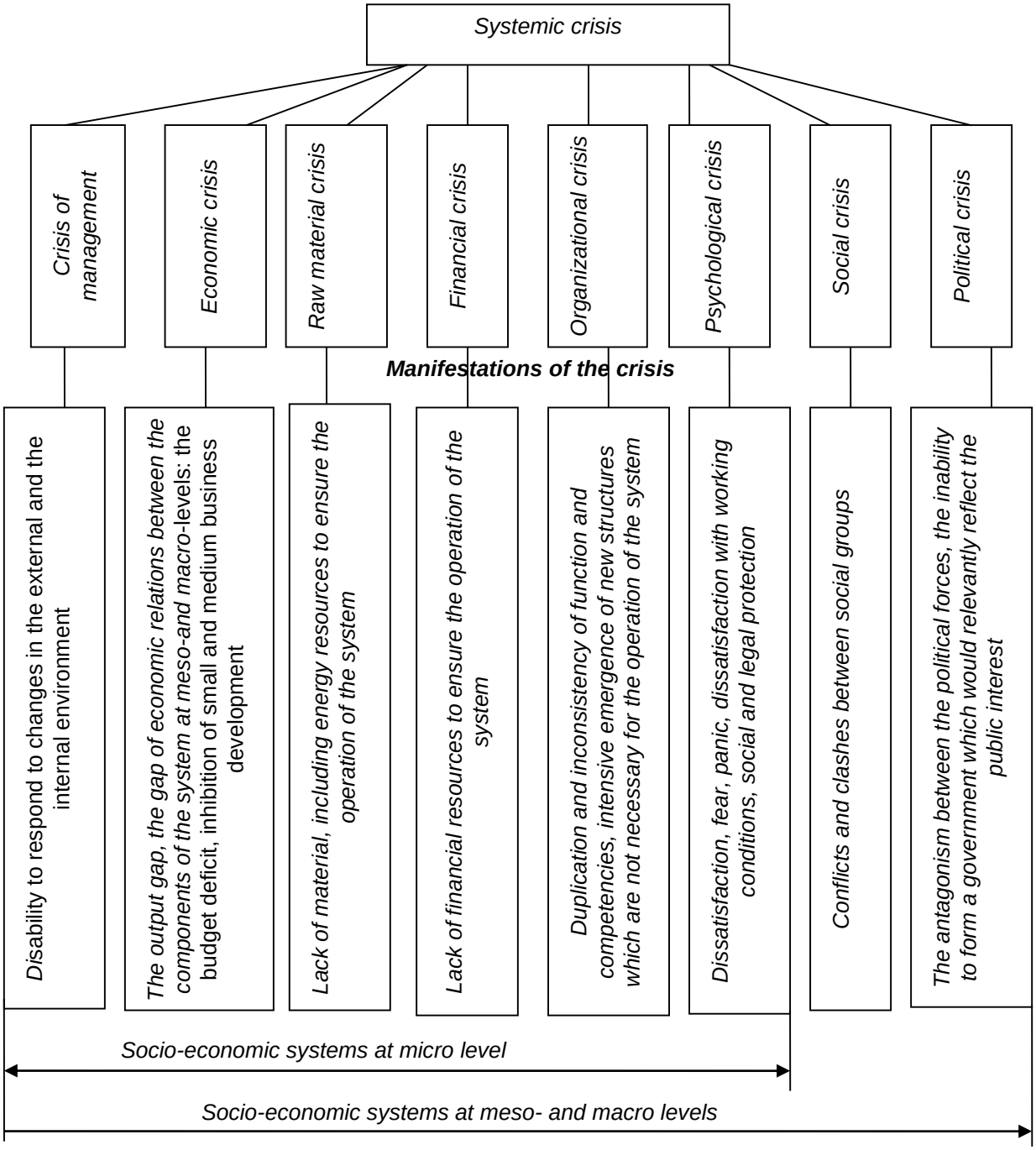


Figure 3. Basic components of a systemic crisis and its manifestations in social and economic systems. Source: developed by the author based on (Paxomova, 2008)

The complexity of socio-economic systems causes the variety of contradictions in them, and thus the difference in crises. Therefore there is a need to classify crises in socio-economic systems

according to their main features. Regarding to the approaches to classification of crises in social and economic systems, the sources analysis on this issue (Slizkova, 2012) allows us to identify several signs of classification (fig.2).

In general, every crisis is unique as to the degree of influence on the economic system, the length, the degree of coverage of elements in the system, and other characteristics. It should be mentioned that there is more detailed classification of crises in the social and economic systems. V. Shpachuk distinguishes eleven signs of their classification (mentioned author calls them "classification criteria".

In terms of impact on the functioning of social and economic system an important feature of crisis is the degree of coverage of main components of the system. It is logical to assume that a systemic crisis is always deeper, longer, caused by a complex web of internal and external factors. The combination of local crises is a systemic crisis (fig. 3).

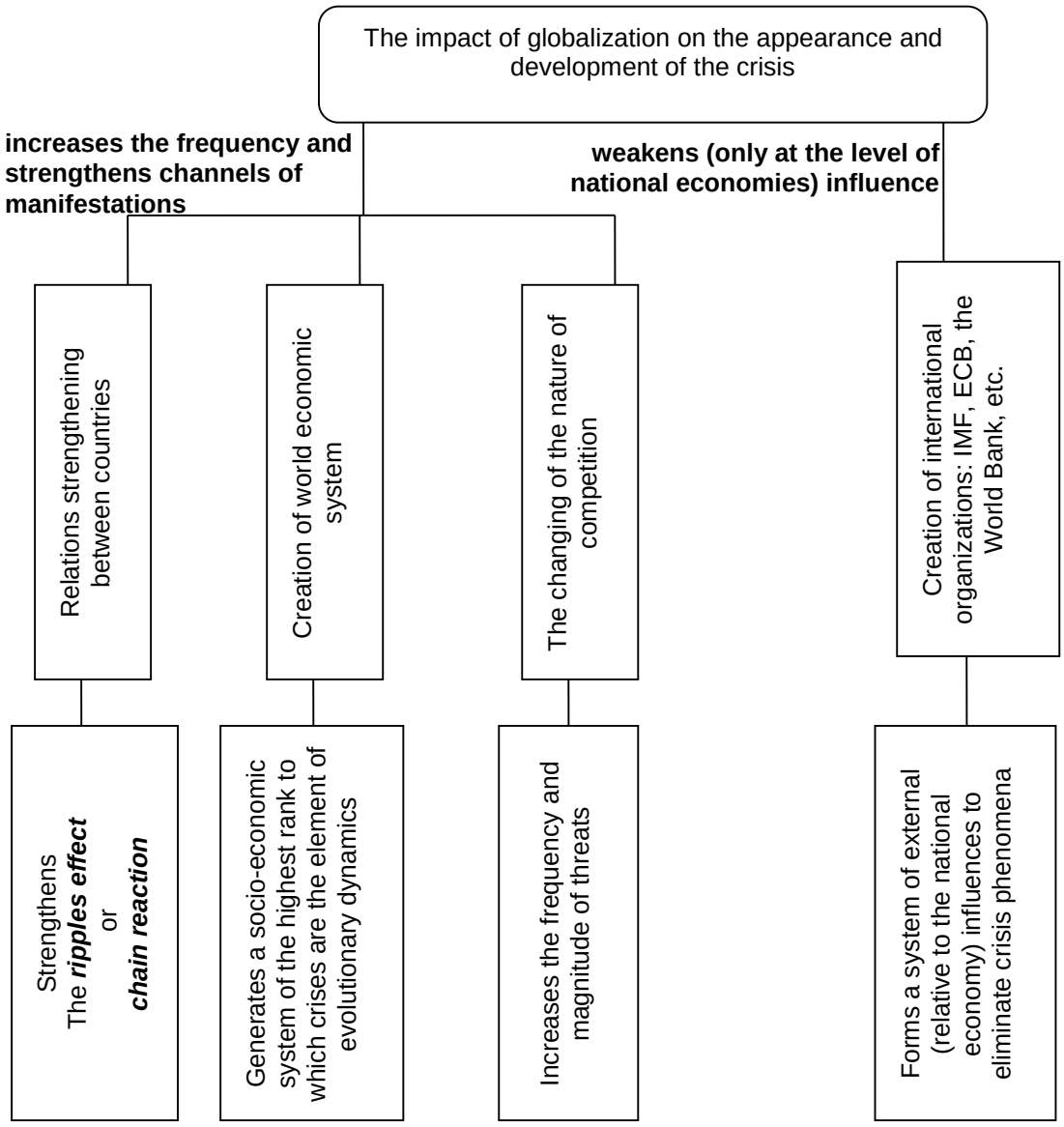


Figure 4. The impact of globalization on the appearance and the development of the crisis in social and economic systemsSource: developed by the author

It should be mentioned that crisis phenomena that match partial crises are interrelated. In this aspect the idea of L. Sytnyk seems to be right, that the crisis situation of the company is characterized by a specific sequence, which includes a chain of economic phenomena related to the causation

(Sytnyk, 2003). This suggestion is applied to the social and economic systems of higher ranks, but the list of phenomena should be expanded from the economic to the socio-economic (including psychological).

Thus, the economic crisis will worsen the possibility of logistical and financial support, conditions of financing, and will cause psychological crisis and social crisis. The appearance of the crisis phenomena in one of the areas of socio-economic system functioning causes the appearance or worsening of the crisis phenomena in another. The opposite sequence can also be set. So, this approach corresponds to the cyclic self-strengthening of crisis phenomena in the major areas of functioning of the socio-economic system. A kind of "crisis cycle" (Dubyns'ka, 2010), or so called "ripples effect" when the crisis is compared with the appearance of waves during the falling of stones into the water (Hit, 2002, p. 23) and can cause and accelerate a number of other crisis situations or crises. "The ripples effect" determines the "chain reaction (Korotkov, 2003), the essence of which is in the distributing of local crisis (crisis in one part of the system) to the entire system, and in some cases to the other socio-economic systems.

Based on the logic of systems analysis and the relations of threats to the competition (competition is a part of the external factors) it is logical to highlight four channels of globalization impact on the appearance and development of the crisis phenomena in social and economic systems (fig. 4).

First we would like to emphasize that globalization makes dialectical impact on the appearance and development of the crisis: while increasing and decreasing the frequency of occurrence and degree of manifestation.

In the present world economic system a number of international organizations such as: the IMF, the World Bank, the ECB, and others have been created. These organizations, in some cases, provide advice and financial assistance to various countries in order to eliminate the crisis.

We consider that the following examples are very illustrative. Major crisis (GDP falling reached almost 10%) was observed in Mexico in 1995, but thanks to the financial support of the IMF, the coordinated actions of USA, and other developed countries it was a short-term crisis. Another examples are the currency crisis in South-East Asia countries, that has been eliminated with the help of IMF; financial support of Greece in 2012 by the EU and other examples. In some cases, such "external" support helps to avoid destructive reconstruction of socio-economic system of the national rank and return it to the state in which it was before the development of crisis phenomena. However, mentioned positive effect of globalization on the crisis exists only at the level of socio-economic systems for the rank of national economies and partly for the level of world economy. For the systems of other ranks it is missing.

Three other channels of globalization influencing the crisis lead to the increased frequency of their occurrence and depth of expression.

Strengthening of interrelations between countries leads to the increase of their interdependence on each other. Under the conditions of globalization business entities in one country become dependent on markets and resources of other countries. For socio-economic systems at the rank of enterprises the external environment under the global conditions is not socio-economic system of higher rank (national economy), which includes the enterprise, but socio-economic systems of higher rank. Thus, in the context of globalization "the ripples effect" has an international character: negative phenomena in one country can cause threats for enterprises activity in the other and through them carries a negative effect on its state.

By changing the nature of competition, globalization affects the appearance and development of the crisis in social and economic systems of various ranks. Under the conditions of increasing dynamics, multi-aspects, multi-market systems, and aggressive competition, negative phenomena in the external and internal environment of social and economic systems arise continuously. Mostly they have a local impact on the activity of the socio-economic system, that's why it is more correctly to call them "quasi-crisis". A continuous set of such events and trends creates a permanent impact on the business, which can be called quasi-crisis pressure. S. Medvedev indicates to the presence of a certain constant action of the external environment on the

socio-economic system. He points out that external factors in the external environment are putting pressure on business structures, while internal factors should resist such pressure (Medvedev, 2010, p. 48). The mentioned author believes, that such pressure acts only in times of crisis, however, it is logical to believe that anti-crisis pressure on the socio-economic system is a permanent phenomenon, every time there is its interaction with the external environment. As a result anti-crisis measures should not be done at a particular point of time, but constantly in order to prevent the escalation of the quasi-crisis pressure into the crisis.

Let's dwell briefly on the nature of the events (threats) that create quasi-crisis pressure under the conditions of globalization.

First of all, increased aggressiveness of competition under conditions of globalization leads to the existent of a constant struggle for the inflow of resources needed for the development of the socio-economic system. The most important such resources in modern terms are the financial capital (investment) and intellectual capital (human resources). In the XXI century we can state the formation of both global investments markets and human resources, especially those, associated with the intellectual capital. So, if for low-skilled employees in a number of countries special barriers are introduced in order to curb the influx of migrants, for foreign highly skilled employees and researchers, on the contrary, all conditions to encourage the arrival and employment are created (Poliščuk, 2009).

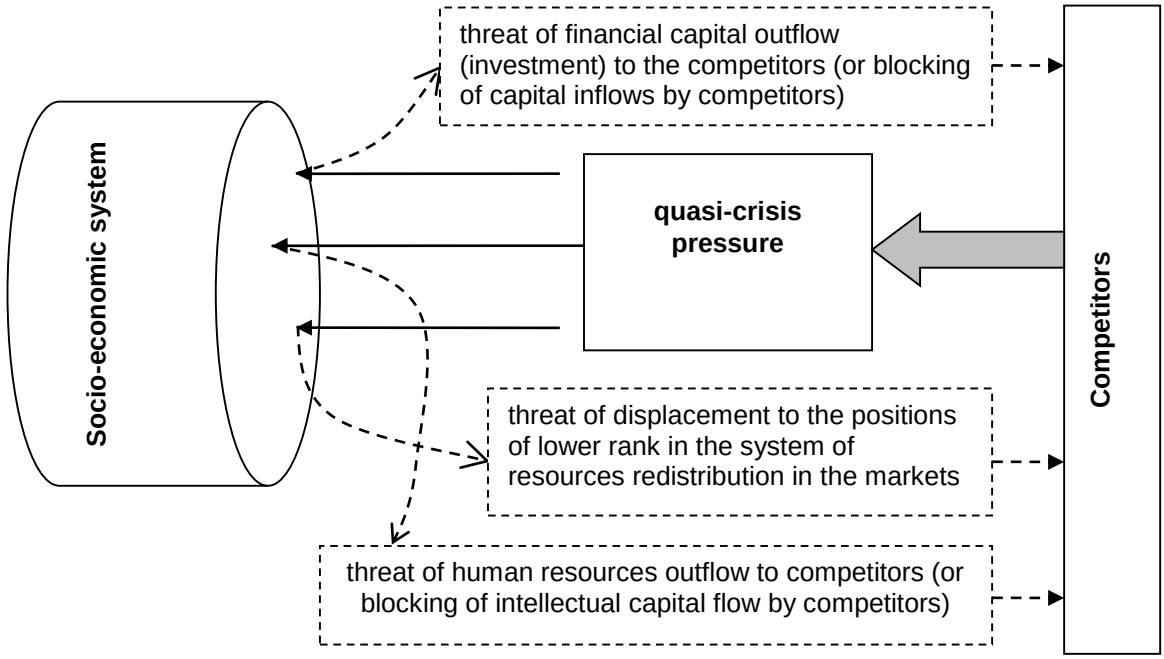


Figure 5. The essence of quasi-crisis pressure in terms of global competition
Source: developed by the author

For the second, in the current context of globalization there is a significant amount of financial and intellectual capital, which is free from the use in a particular socio-economic system. But it becomes more and more difficult to engage it to the use because the other socio-economic systems try to make the same. If they do it, then the international flows of investment or intellectual capital bypass certain country or, on another level, – the enterprise. Then we consider that it is true to state "blocking" of flows of resources in the socio-economic system. To prevent this it is needed to spend constantly some resources to maintain the proper level of appeal for those types of resources needed for the development.

It is logical to point out three blocks of threats which form a quasi-crisis pressure under the context of competitive environment and act on the socio-economic systems rank to the national economy and associations including: threats associated with the competition for financial capital; threats associated with the competition for the intellectual capital; and threats associated with

competition for rank positions in the system of redistribution of income in the global market (fig.5).

Competition doesn't exist literally in the world economy as a whole, but it can be understood in a figurative sense, as a possible way of competition. In this case the resource market is expanding to the global ecosystem, and rank positions will mean composition of resources able to be used by the global economy as a whole for its development. Outflow of resources will mean the decrease of efficiency of their use and reducing of overall intellectual capital.

The outflow of financial resources will mean that less of them will be used in economic purposes, and more – to the elimination of negative impact of humanity on the ecosystem. Quasi-crisis pressure exists in the case of global economic system, but in the future we will consider it primary as a system of higher rank (external environment) to national economies. Indeed, based on the purpose and object of the research, crisis phenomena should be viewed from the standpoint of managing of socio-economic systems. In the case of world economy it's impossible to state now that effective mechanisms for its management on a global level as a whole social and economic system are produced. Therefore, it is logically to shift the main focus to socio-economic systems of lower rank.

3 CONCLUSIONS

Quasi-crisis pressure causes additional costs of social and economic system of a number of resources for its "restraint". Thus, if certain number of scientific personnel migrated from the country, it is needed to incur additional costs to train new professionals. If skilled workers left the company, it is necessary to spend extra funds to find new ones. If the loss of intellectual capital was compensated, the system continuous to operate as if outflows weren't existed. But additional resources have been spent for it. If their amount, allocated for compensation of quasi-crisis pressure was insufficient, or they weren't allocated at all, the resources base of the system starts to decrease (in this case due to the outflow of intellectual capital), quasi-crisis phenomena are accumulated and develop into a crisis. The same is true for financial capital. The above mentioned is the essence of the external manifestation of quasi-crisis pressure.

On the other hand, in the enterprise, in the region or country it is necessary to follow the working conditions, salary, and opportunities for development; social status was not lower than in the competitors. Otherwise an outflow of resources will be observed. This is an internal manifestation of quasi-crisis pressure.

The competition involves competition for certain rank positions in the system of redistribution of profits in certain markets. Therefore, there is a constant threat of displacement of rank position to a lower level position in the system of income redistribution. If the resulting gross profit is not enough to deter quasi-crisis pressure, crisis phenomena start to develop in the socio-economic system, because the system has no resources to deter quasi-crisis pressure. Thus in the global competitive environment socio-economic system must secure the following rank positions in the redistribution of income, which should at least be higher than the resources needed to compensate quasi-crisis competitive pressure, considering the amount of resources needed to support its operation.

So, in terms of global competition countering crises should be directed not only to avoid or eliminate adverse events or crises, but also to provide resistance to quasi-crisis pressure. Their appearance is the objective result of hyper competition, and therefore it is impossible to eliminate or prevent negative trends or phenomena at all. Instead, the subjects of management of socio-economic systems need to realize that to maintain the operation and maintenance of subjects of management development the constant resistance of quasi-crisis pressure is needed. The last needs: a) a certain amount of resource support; b) the effective use of allocated resources.

In the terms of globalization of economic relations it is needed to state that the competitiveness management of socio-economic systems at different levels is closely interrelated with anti-crisis management not only at the enterprise level, but also at regional and national economies. Without providing sufficiently high rank position in the market of profit redistribution, a company or a country sooner or later will face with the problem

of lack of resources to counter quasi-crisis pressure from the competitive environment.

The above mentioned thesis is correlated with the concept of “normal profit” in the theory of the field equilibrium by J. Robinson. He determines the equilibrium at the market as the one in which there is no tendency to change the number of firms that operate in it, the profit which a company receives under the conditions of market equilibrium is “normal” (Robinson, 1933, p. 142). If the profit is less, then the companies will go out of the field (it is the destruction of enterprises as socio-economic systems as a result of crisis). Average profit is actually equivalent to the minimum income in the terminology of J. Robinson, and it allows resisting quasi-crisis pressure of competitive environment.

Therefore, the introduced and justified term “quasi-crisis pressure” allows combining the approach to competition as competition for ranked positions in the system of resources redistribution with the management of system development from the standpoint of preventing crises. Globalization dialectically affects the frequency and the degree of manifestation of crisis in socio-economic systems. On the one hand, due to the activities of international financial institutions countering crisis is made in individual countries, but the impact of globalization on increasing and strengthening crisis manifestation in socio-economic systems of various ranks is much wider. Such effect is done:

1. due to the strengthening of “chain effect” of crisis (as a result of interconnectedness of separate economics increase);
2. due to the appearance and formation of socio-economic system of the highest level – world economy, in which the crises are objectively conditioned stage of evolutionary development;
3. by increasing of quasi-crisis pressure (due to changing of competition under the influence of globalization).

Therefore, prevention of the appearance and development of crisis to avert degradation of the system or its reduction becomes of a particular importance in the management of socio-economic systems in the terms of global competition.

Moreover, the presence of continuously existing threats to reduce the resources required for the operation of the system brings to the fore a long-term (strategic) horizon of management to ensure a minimum level of resources to deal with the constant quasi-crisis pressure.

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Received for publication: 31.01.2014
Revision received: 12.06.2014
Accepted for publication: 23.06.2014

How to cite this article?

*Style – **APA** Sixth Edition*
Mykhailovska, O. (2014, 07 15). The impact of globalization on the emergence and development of crisis. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 149-158. doi:10.12709/mest.02.02.02.16

*Style – **Chicago** Fifteenth Edition:*
Mykhailovska, Oksana. 2014. "The impact of globalization on the emergence and development of crisis." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 149-158. doi:10.12709/mest.02.02.02.16.

*Style – **GOST** Name Sort:*
Mykhailovska Oksana The impact of globalization on the emergence and development of crisis [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 149-158.

*Style – **Harvard** Anglia:*
Mykhailovska, O., 2014. The impact of globalization on the emergence and development of crisis. *MEST Journal,* 15 07, 2(2), pp. 149-158.

Style – **ISO 690** Numerical Reference:
The impact of globalization on the emergence and development of crisis. **Mykhailovska, Oksana.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 149-158.

MEST Journal
DOI 10.12709/mest.02.02.02.17

MANAGEMENT STRATEGIES FOR ACHIEVING ENERGY EFFICIENT AND SUSTAINABLE TRANSPORTATION SYSTEM

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JEL category: **Q01, Q4, Q56, R41**

Abstract

This paper aim is to explore the indicators and measures toward sustainable transportation system, with particular emphasis on the energy consumption and trends which prevent the achievement of policy objectives of reconciling the economic interests of the transport sector with energy constraints. Several arguments substantiated by empirical evidence from EU countries are put forward to demonstrate that current megatrends in transport are at odds with a sustainable development and lead to high social costs. A variety of policy strategies is discussed to improve the current threatening situation.

The various paragraphs of this paper concentrate on the real problems which energy efficiency of transport present to policy-makers and assess the contribution that the analysis can make to handling more effectively recpective considerations in transport decision making. Previously, transport energy consumption concerns have been mainly restricted to local factors but recent concerns over the big dependence of the whole EU economy on the fossil fuels and of pollution-induced diseases have given importance to regional, national and global implications.

The paper is to provide a general background against which the new research may be set. It does not aim either to be comprehensive in its treatment of all possible management strategies in transport or to provide answers of the questions that it or its paragraphs raise. It is hoped, however, that it may flag some of the key issues where uncertainty remains and where subsequent research could prove beneficial.

Keywords: energy efficiency; sustainable transport; management strategies

1 INTRODUCTION

Transport energy efficiency is now very close to the top of the political agenda in many countries. There is a widespread consensus that progress towards sustainable development is essential.

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However, there is considerable debate as to what this term means? One particular part of this debate concerns the role of transport as a major consumer of energy and a generator of pollution. The question is: can transport activity be planned in such a way as to be more energy-efficient?

Demands for greater transport flexibility have increased dependence on road transport, which tends to raise aggregate energy consumption and generate air pollution and to have other adverse effects on the environment which, though not always cumulative and irreversible, are nevertheless not sustainable in the sense that they do not represent chosen outcomes. In practice, however, these adverse environmental (and social) impacts are very difficult to reverse once activity locations and personal lifestyles have been arranged to accommodate a high level of road transport dependency. The challenge is to devise management measures ensuring that the actual outcomes are chosen, rather than being the unintended and unforeseen consequences of the policies adopted.

Viewing transport within the general perspective of sustainable development yields some immediate insights on this process (Jeon & Amekudzi, 2005). The weight placed on the various components of the general quality of life varies, of course, with the country and every country must ultimately define its own path of development. Whatever the preferred balance, increasing economic sustainability can always advance environmentally sustainable development, but does not necessarily do so. Failing to incorporate energy efficiency considerations in the assessment of projects and policies is what creates the "sustainability gap." The policy challenge is to recognize the trade-offs and to devise instruments that will prevent the sustainability gap from developing.

2 ENERGY EFFICIENCY IN THE CONTEXT OF SUSTAINABLE TRANSPORT DEVELOPMENT

Sustainability requires policy and institutional reform. The challenge is to define the strategy for enhancing energy efficiency that governments need to adopt in order to increase sustainability of transport. Generally, it is recognized that the problems are very diverse. Infrastructure and basic accessibility deficiency tends to be a more dominant problem, while service quality deficiency tends to be in the background. The policy and institutional changes that are necessary to enhance economic, environmental and social sustainability should be considered. The new focus does not vitiate the continuing importance of efficient transport to trade, mobility and, hence, to economic growth, or its contribution to the achievement of environmental and social objectives. However, it does highlight the fact that the traditional emphasis on public sector operation and regulation has often failed to make that contribution in a continuing, sustainable way. This has been partly a human resource problem, as governments do not possess adequate skills for carrying out the planning and control tasks required, and partly an institutional problem so far as governments continue to rely on mechanisms that make unrealistic demands on human resources and motivations. Therefore, we consider the new demands that the emphasis on sustainability place on governments.

2.1 Energy efficiency as a headline indicator for sustainable transport development: analysis and assessment

Final energy consumption covers all forms of energy, as they are delivered to the final consumers (industry, transport, households and other sectors), for all energy uses.

The data on figure 1 show the quantities of fuel consumed in the EU, expressed in tons of oil equivalent (toe). The final energy consumption of the EU-27 transport sector amounted to 351.1 million toe in 2012. It made up somewhat around one third (31.8%) of total final energy consumption (Figure 2), a share which rose from 26.3% in 1990.

This is due to transport's energy consumption growing at an average annual rate of 2% from 1990 to 2011, while energy consumption in industry was reduced (figure 3).

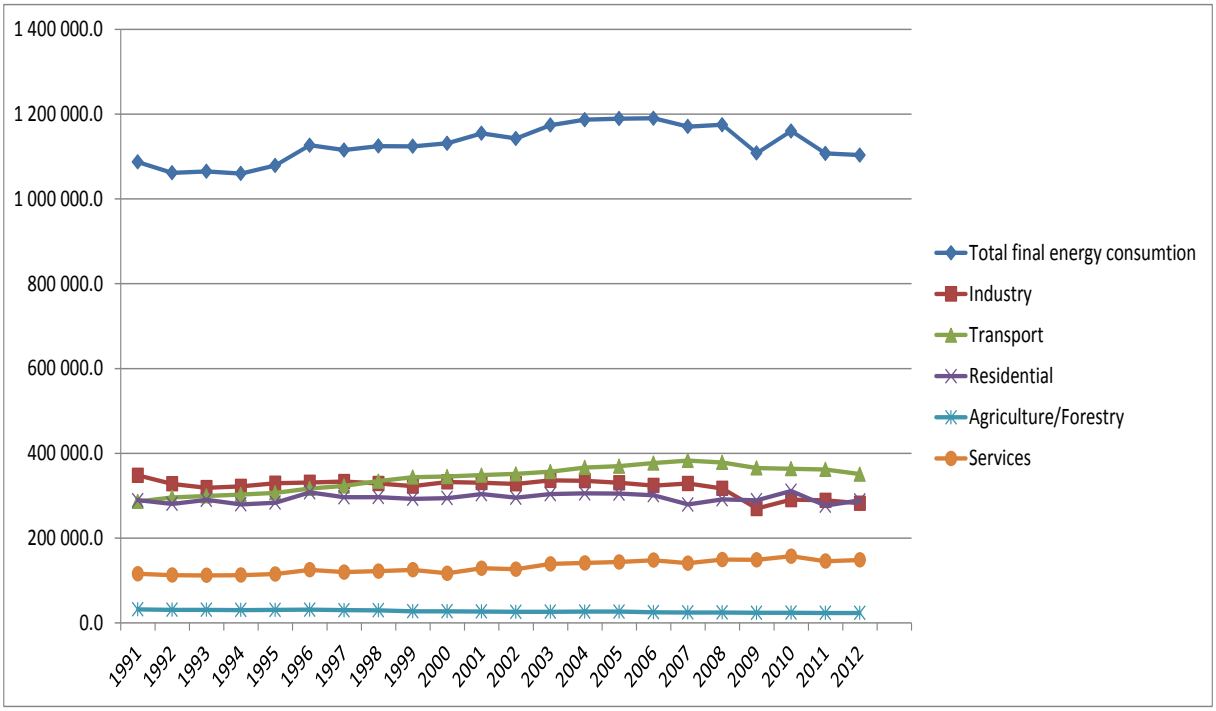


Fig. 1 Final energy consumption in EU, by sector (mtoe)

Source: *(EUROSTAT, 2014)*

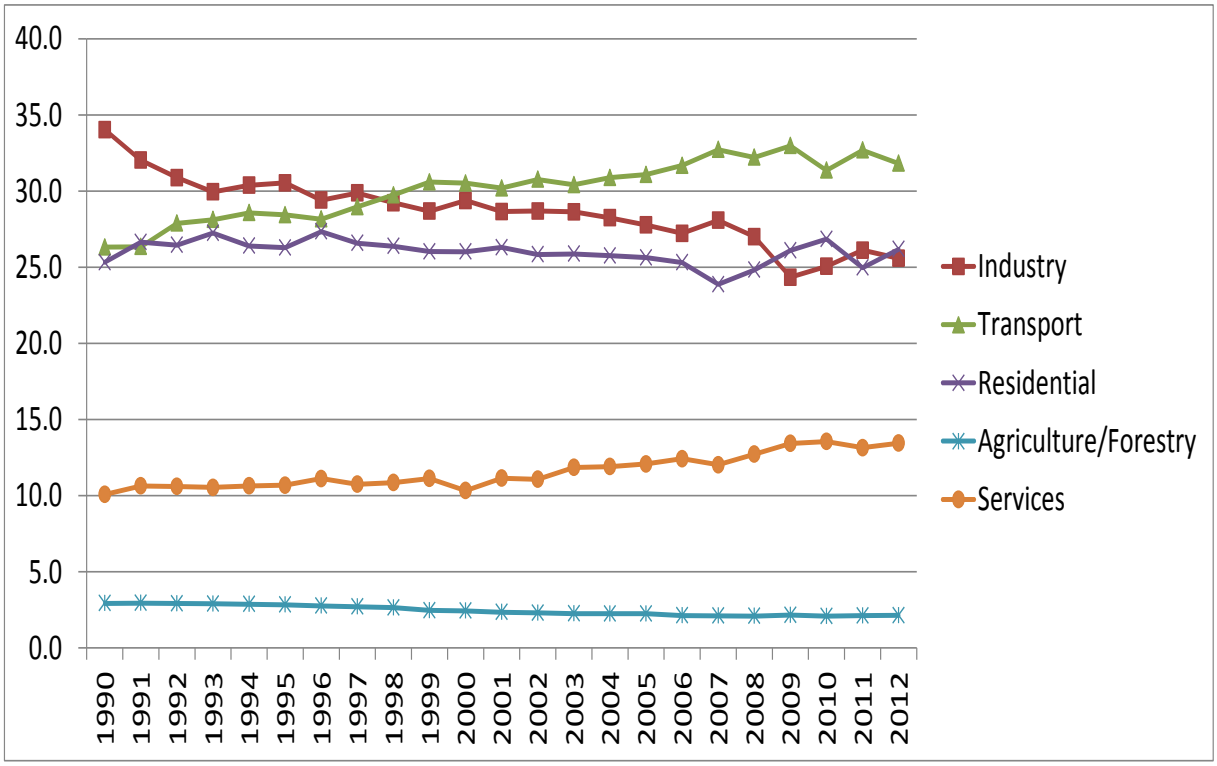


Fig. 2 Share in the final energy consumption by sector, 2012

Source: (EUROSTAT, 2013)

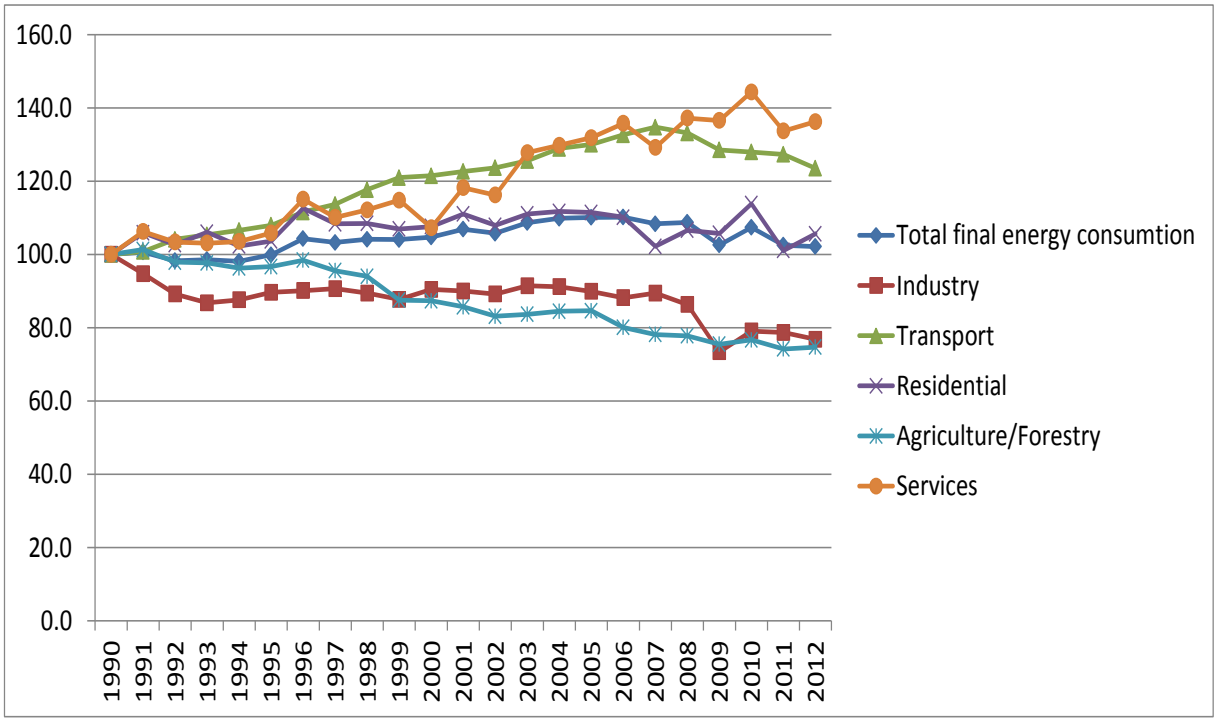


Figure 3 Change in the final energy consumption by sector, 2012
Source: (EUROSTAT, 2013)

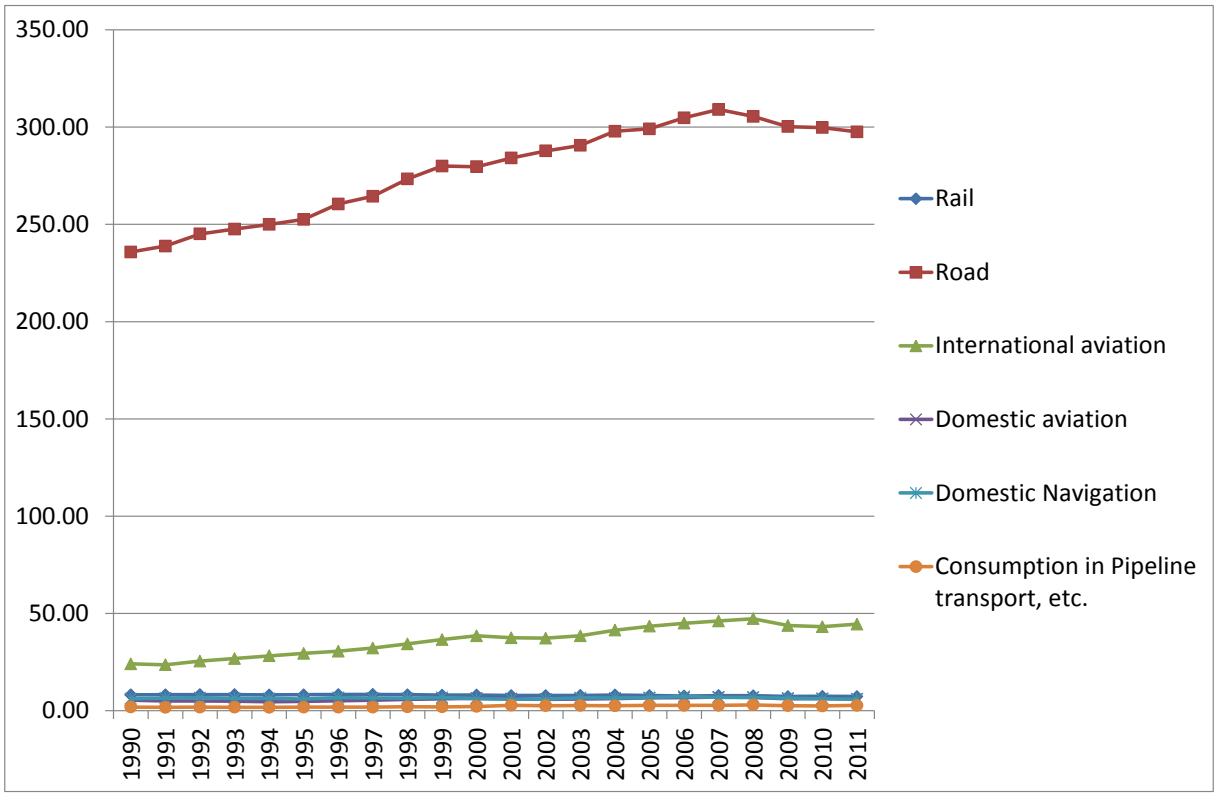


Figure 4 Final energy consumption by mode of transport
Source: (EUROSTAT, 2013)

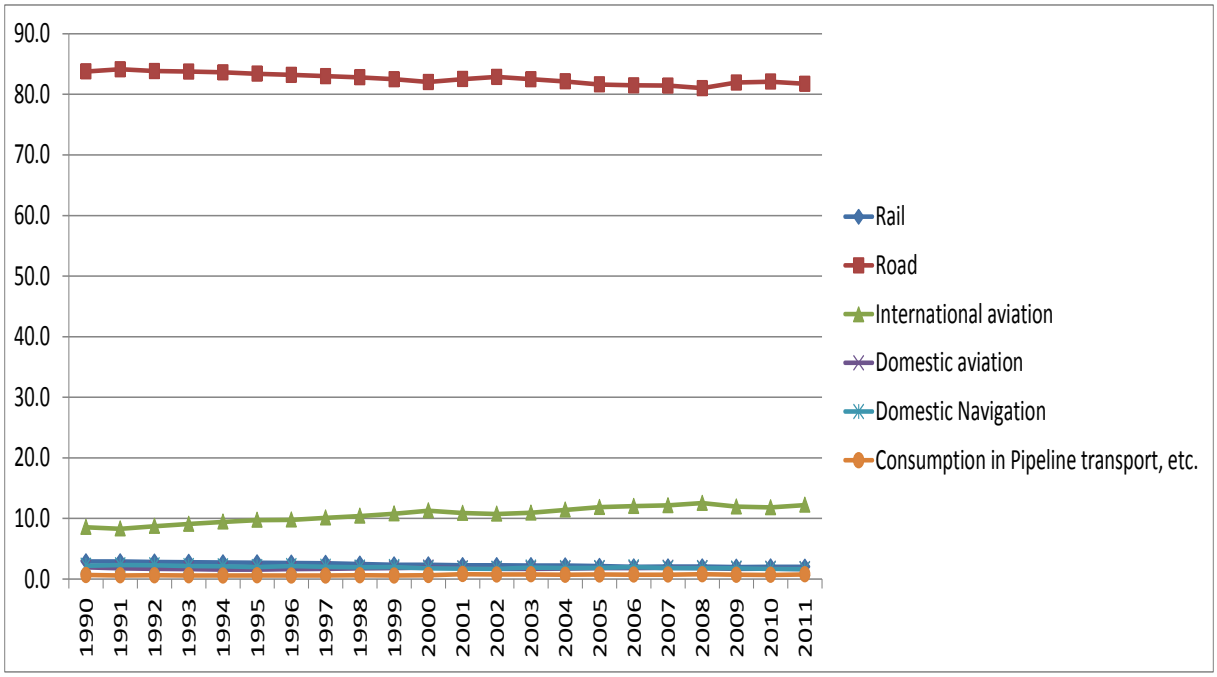


Figure 5 Share in final energy consumtion by modes of transport
Source: (EUROSTAT, 2013)

Transport accounted for 83% of the 108.6 million toe increase in total final energy consumption from 1990 to 2011. Growing fleets of passenger and goods road vehicles with higher performances, and a strong increase in the provision of air transport services in the reviewed period were the main contributors to the higher energy consumption of the transport sector. Road transport is the mode consuming most energy in the EU (figure 4).

From 1990 to 2011, the final energy consumption of road transport grew at an annual rate of 1.1%, to reach 297.5 from total 364.08 million toe in 2011, which amounted to 27% of total final energy consumption, and to 81.7% of consumption in transport (figure 5).

According to data from a recent EUROSTAT publication, private cars accounted for 56% and lorries for 40% of total energy consumption in road transport. Road freight transport also saw progress as it consumed 67 toe per million tkm.

Rail made up 2% of final energy consumption in transport in 2011 compared to 3.4% in 1990. While energy consumption by rail was close to unchanged in 2004 compared to 1990, (both years: 9.6 million toe), it fell thereafter to reach 7.3 million toe in 2011. This is due to reductions in rolling stock. Given 1% yearly increases in rail passenger and freight transport performance over the period, energy efficiency gains may be expected to have been made, with for example electric-power replacing diesel oil.

Inland navigation was the transport mode that consumed least energy in 2011 (5,9 million toe) when it made up 1.6% of total transport energy consumption. From 1990 to 2011, energy consumption by inland navigation fell at an average yearly rate of 0.001%. While vessel numbers have decreased, their performance has tended to grow, also pointing at energy efficiency gains.

The final energy consumption of air transport increased throughout the period, except between 2000 and 2002. It raised from 29.1 million toe in 1990 to 50.5 million toe in 2011, at an average annual rate of 3.0%, the highest rate among the four transport modes covered. The share of air transport in final energy consumption increased from 10.4% in 1990 to 13.9% in 2011. Through the improved design of aircrafts and engines, and through higher passenger and freight loads, air transport may be expected to have made noticeable energy efficiency gains measured in toe per pkm.

Based on the analysis, the headline indicator for sustainable development of transport is set to be energy consumption relative to GDP. This indicator is defined as the ratio between energy consumption of transport and GDP (chain-linked volumes, at 2000 exchange rates). The energy consumed by all types of transport (road, rail, inland navigation and aviation) is covered, including commercial, individual and public transport, with the exception of maritime and pipeline transport.

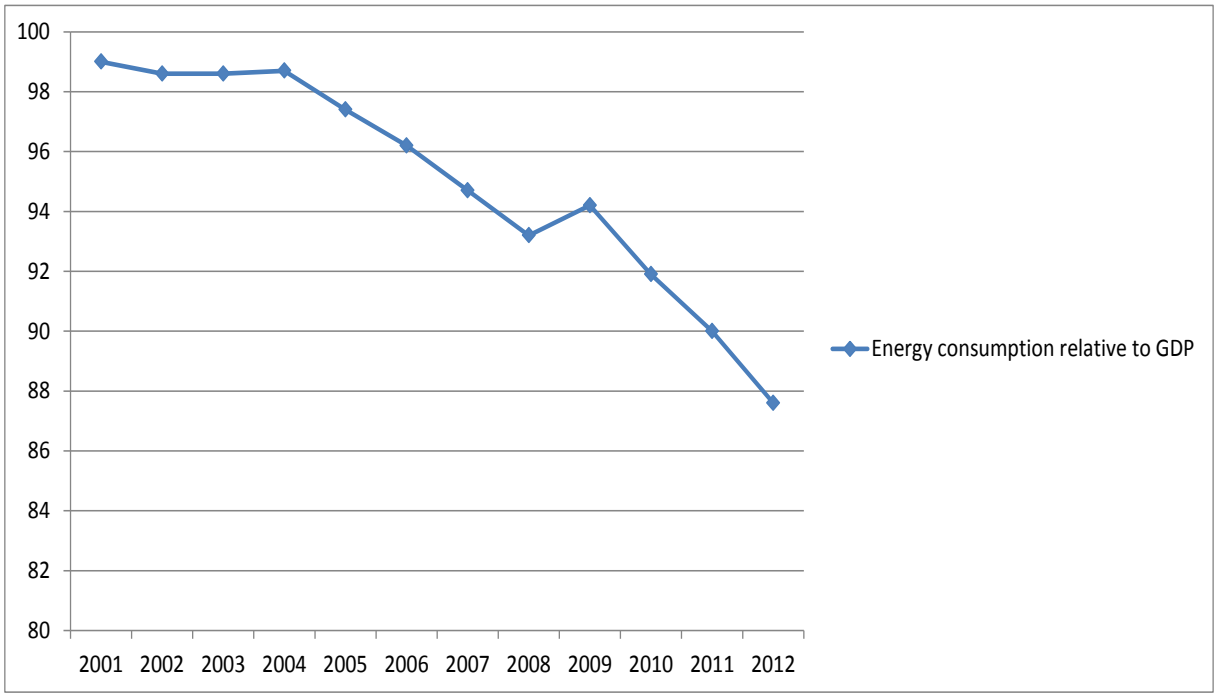


Figure 6 Energy consumption of transport relative to GDP
Source: (EUROSTAT, 2014)

Between 2000 and 2012, the energy consumption of transport in the EU increased by 8%, whereas GDP grew at the somewhat faster rate of 12%. As a result, the energy consumption of transport per unit of GDP decreased by an average of 0.6% per year, indicating a small relative decoupling.

The reduction in energy consumption in last years is evidently a consequence of the economic crisis and corresponding slowdown in economic activity as reflected in GDP. Even if 2010 has seen a small upturn in GDP, short-term data on sales of transport fuels indicate that consumption of energy by transport continued to fall in 2012.

In the coming decades, oil and other fossil fuels are expected to become more expensive as demand increases and low-cost sources dry up. The negative impact on the environment will be greater, as conventional sources are replaced by more polluting supplies. At the same time, the need to move to a low-carbon economy and the growing concerns about energy security will bring about a greater supply of renewable energy, made much cheaper by technological progress and mass production.

Nearly the entire energy consumption of the EU transport sector consists of hydrocarbon fuels. In yielding their performance, transport vehicles combust fossil fuels and release substantial amounts of carbon dioxide (CO_2) as well as a range of other types of emissions harmful to human health and which can effect anthropogenic changes on the living environment.

As it could be seen from the figure 7, compared with 1990 levels, in no other sector has the growth rate of greenhouse gas (GHG) emissions been as high as in transport. This section predominantly covers the emissions of greenhouse gases which can contribute to global warming, and thus form a major external cost of transport.

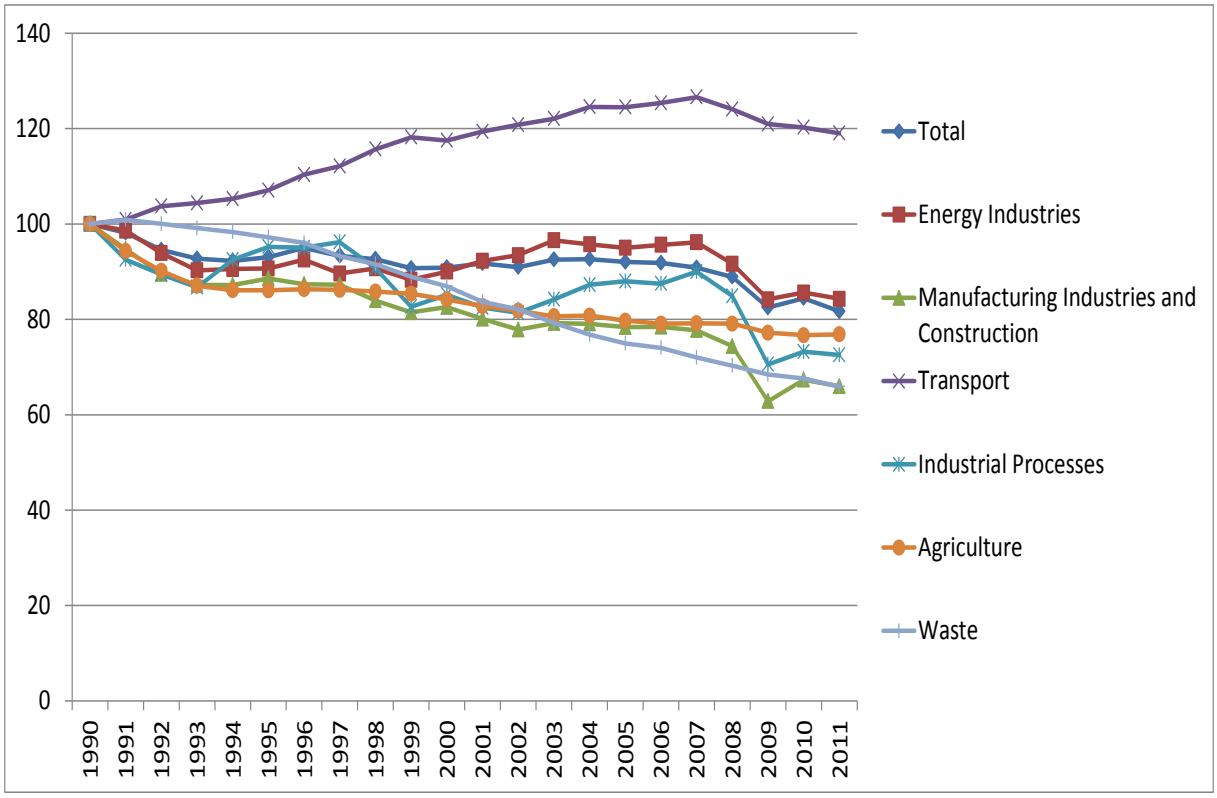


Figure 7 Change in GHG emissions by sectors, EU
Source: (EUROSTAT, 2013)

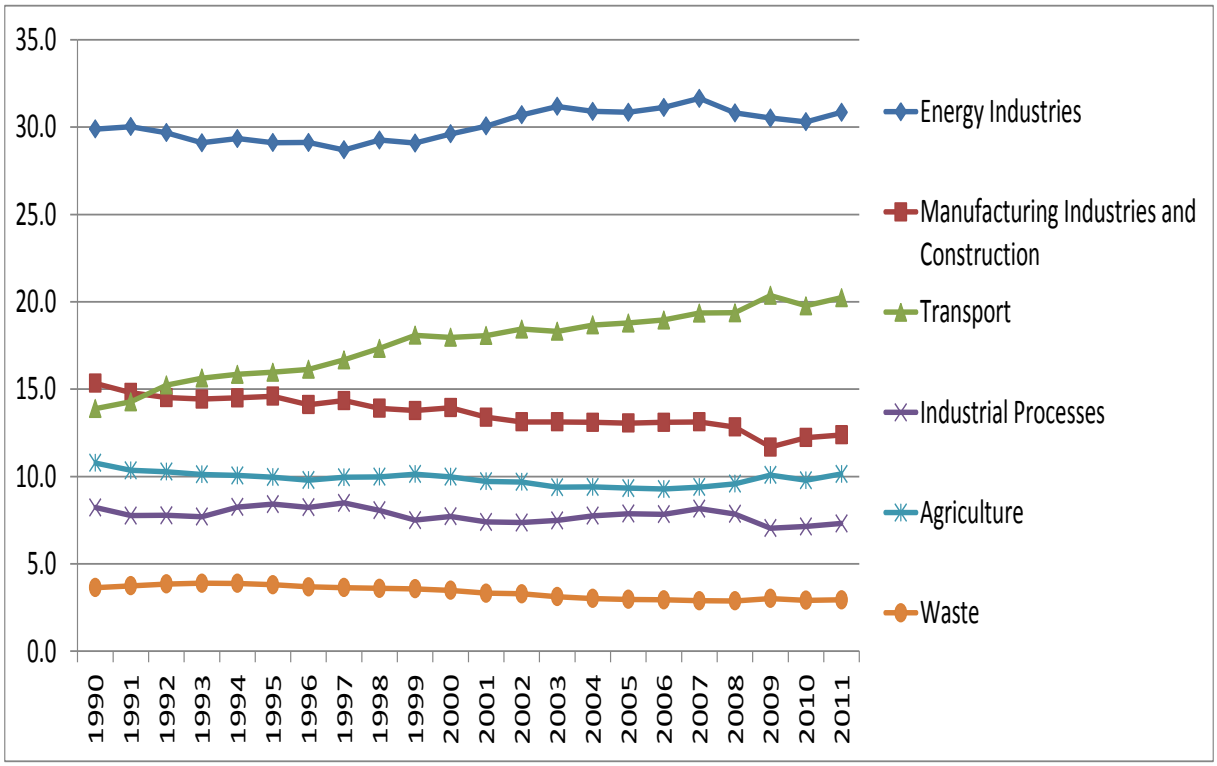


Figure 8 GHG emissions shares by sector in EU
Source: (EUROSTAT, 2013)

Total GHG emissions of 926,4 CO_2 equivalent were attributable to transport in the EU in 2011. Second largest after the energy industries (30.8%), transport made up a share of 20,4% of total GHG emissions (Figure 8). Its proportional contribution has risen from 14% in 1990 due to own-increases and to reductions in all other sectors. If one were to add the emissions of international maritime shipping and aviation calculated on the basis of emissions from bunkers – of which maritime shipping accounted for 57% and aviation for 43% – the total amount would rise from 961.8 to 1,297.3 million tonnes CO_2 equivalent.

In comparison to an average yearly decrease in total GHG emissions of 0.9% in the EU from 1990 to 2011, transport was the only sector not to display a reduction in emissions, rather recording growth at an average annual rate of 0.8% over the period. This average yearly increase in total GHG emissions by transport was driven by annual increases of 1.4% in road transport and of 3% in air transport. In contrast, rail's GHG emissions fell at a yearly rate of 3.1% over the period (see figure 9).

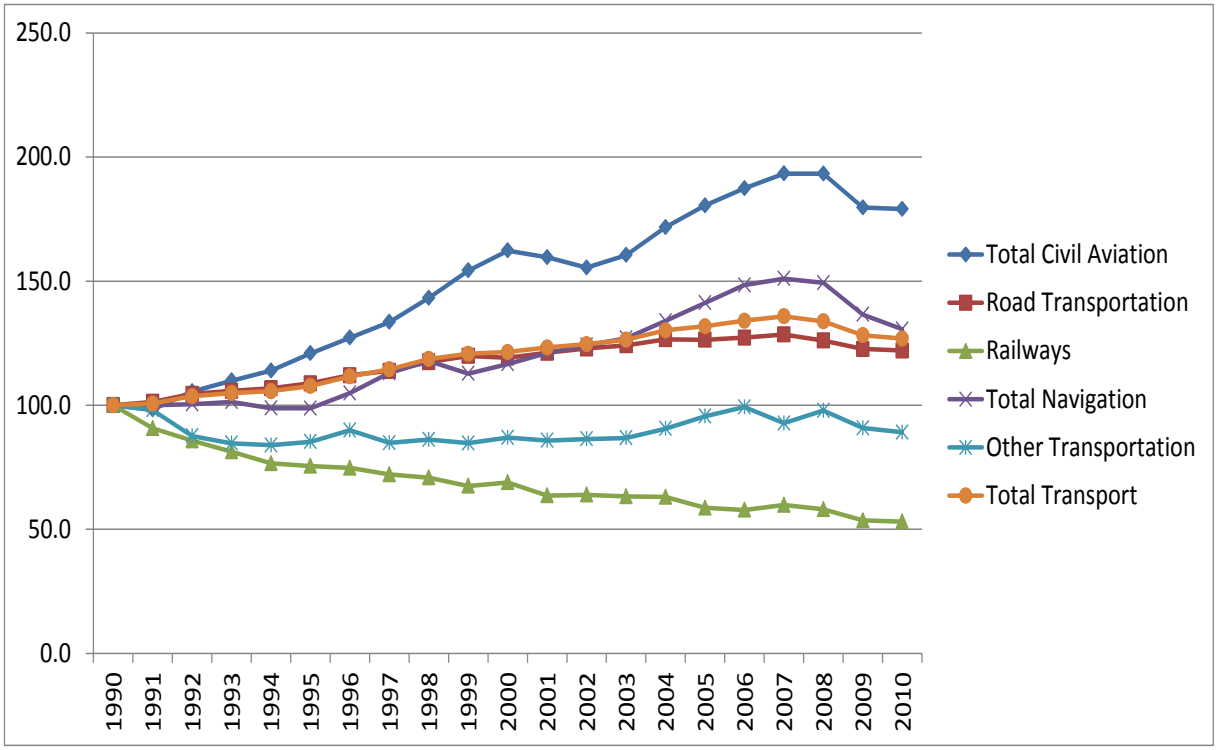


Figure 9 Change in GHG emissions from transport by mode, EU

Source: (EUROSTAT, 2013)

Road transport contributed 72.1% to the greenhouse gas emissions of the transport sector in 2011 (Figure 10). Its share in total transport emissions rose from around 74.9% at the beginning of the first half, then stabilizing at above 75.8% in 1994. This may be attributed to the road sector's growth and to the reduced emissions of other transport modes. After peaking in 1994, road's contribution to the total GHG emissions of transport fell gradually due to the growing share of air transport (from 8.8% in 1990 to 12.5 in 2011).

With the aim of improving air quality, cars have to comply with standards for exhaust emissions before being sold on the EU market. Successive 'Euro' emission standards for passenger cars and light vehicles – typically referred to as Euro I, Euro II, etc. – have already helped to reduce air pollution from cars, for example by obliging carmakers to equip exhaust pipes with catalytic converters and particle filters (EUROSTAT, 2009).

The Euro standards set limits on vehicles' emissions of carbon monoxide (CO), hydrocarbons (HC), oxides of nitrogen (NO_x) and

particulate matter (PM). Separate emissions regulations apply for diesel and petrol cars, vehicles of successive motor capacity, heavy-duty lorries and buses as well as motorcycles. New cars' and light commercial vehicles' (vans) emissions are currently regulated by the Euro V standards which came into force in 2009. Reducing emissions from road vehicles has come a long way, and the proportion of cars complying with the latest and most stringent emission standards is increasing.

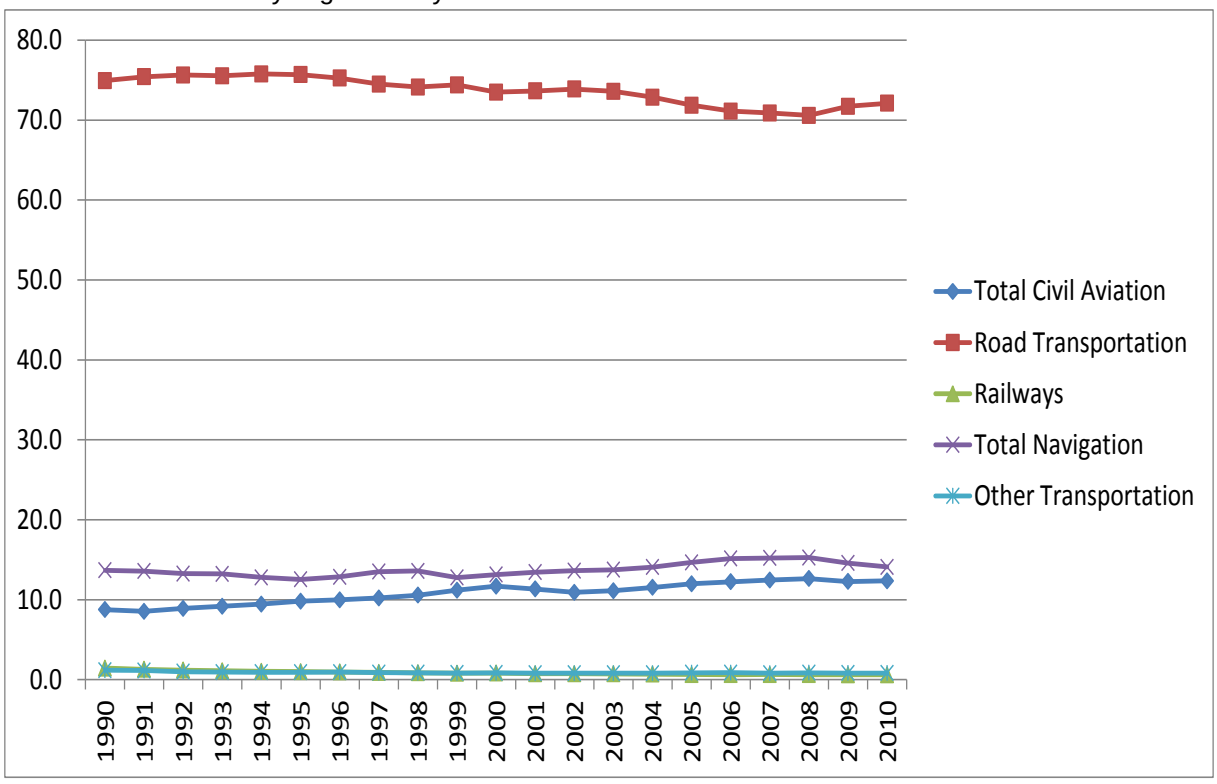


Figure 10 Share by mode in total transport GHG emissions, EU

Source: (EUROSTAT, 2013)

With a share of 2.3% of transport greenhouse gas emissions, and displaying an average annual growth rate of 0.8% from 1990 to 2011, inland navigation is of considerable interest from the perspective of greenhouse gases and it still has potential for further development at EU level.

According to EUROSTAT external trade data, maritime transport is used for about 70% of the EU's freight exchanges with the rest of the world. International navigation accounted for 13% of EU transport sector GHG emissions in 2011. In November 2002, the European Commission adopted an European Union Strategy to reduce atmospheric emissions from seagoing ships. The strategy reports on the magnitude and impact of ship emissions in the EU and sets out a number of actions to reduce the contribution of shipping to acidification, ground-level ozone, eutrophication, health, climate change and ozone depletion (DG-TREN, 2009).

Liberalization of air traffic has certainly brought further positive effects with regard to the 'democratization' of air travel, but it is increasing rapidly, at rates which may outperform the impact of technological improvements that reduce engine emissions. At a local level, in the immediate vicinity of airports, concerns focus on the potential health and environmental effects of noise and air pollution, especially from NOx, volatile organic compounds and particulates.

Not only was air transport the fastest growing energy consumer in the EU transport from 1990 to 2011, but it was also the fastest climbing contributor of GHG as its emissions grew at an average annual rate of 3%.

2.2 Measures for improving energy efficiency of transport

The growth of transport activity raises concerns for its environmental sustainability. Transport systems are major emitters of greenhouse gases. Currently 95% of transport energy comes from petroleum, although electric trams and trains are also common and natural gas is used as well. Internationally, biofuels are forecast to have little or no impact on greenhouse emissions, at significantly higher cost than energy efficiency measures (Munasinghe, 1993). Electric vehicles are another technology which has the potential to reduce transport CO_2 emissions, depending on the embodied energy of the vehicle and the source of the electricity.

On the other hand, the environmental impacts of transport can be reduced by improving the walking and cycling environment in cities, and by enhancing the role of public transport, especially electric rail. The most popular forms of green transport, providing a way of sustainable mobility are walking, bicycling and so-called green vehicles . Green vehicles also include:

- *Solar vehicles* - not practical day-to-day transportation devices at present, but are primarily demonstration vehicles and engineering exercises, often sponsored by government agencies;
- Wind-powered electric vehicles;
- *Electric cars* - currently, in most cases, electrical power is derived from battery packs carried on board the vehicle;
- Hybrid vehicles; and
- Electric trains and electric buses.

As the transport sector relies on fossil fuels for 97% of its needs, the fight against climate change in this sector goes hand in hand with efforts to improve its energy efficiency. Over recent decades, EU transport has increased at a sustained pace. Freight transport generally follows trade activity and has grown more than GDP, while passenger transport, except for aviation, has undergone a less dramatic rise (see figure 11) . These trends can only be sustained, however, if transport radically improves its energy efficiency and reduces its GHG emissions.

Apart from the choice of vehicle and transport mode, a key to further reducing energy consumption and pollutant emissions is the efficient use.

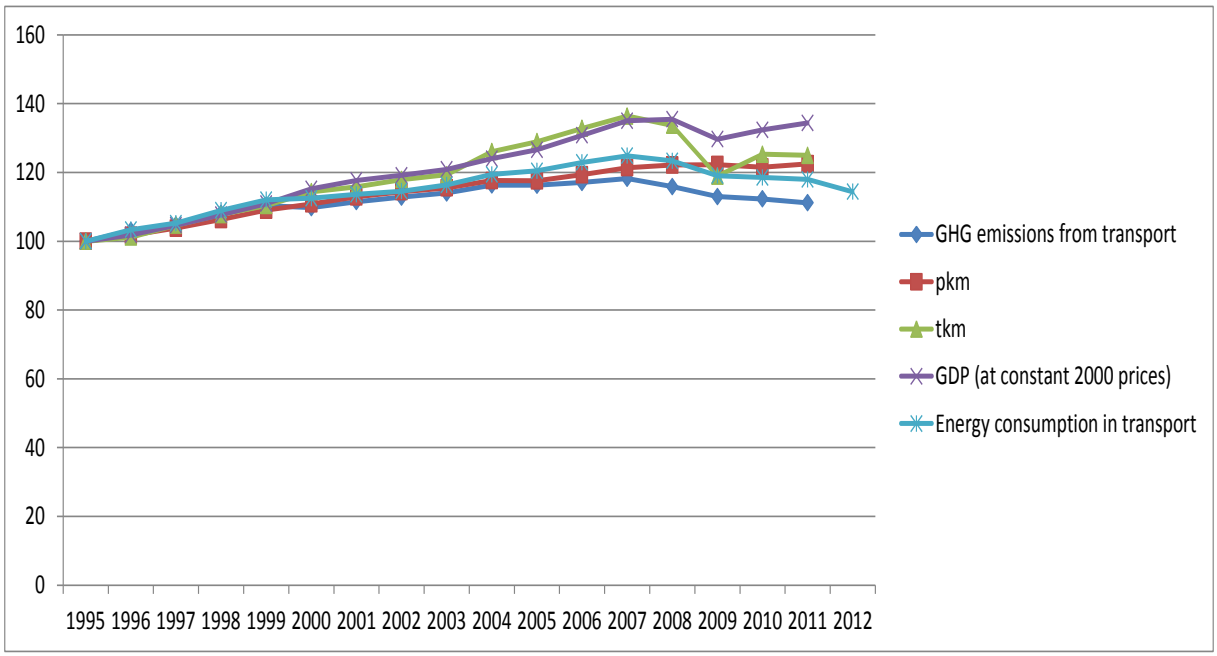


Figure 11 Change in energy consumtion and GNG emissions relative to GDP, freight and passenger traffic, EU Source: (DG MOVE, 2013)

The more efficiently vehicles are used – through their higher occupancy rate, optimum volumes of goods transported, style of driving, etc. - the less energy is consumed and the less pollution is caused per person or per tonne of goods per kilometre travelled. Occupancy rates have generally tended to decline over time both for passenger cars and for buses and coaches, while they have remained more or less constant for rail transport. In contrast in air transport, a steady increase in the occupancy rate has taken place. This can be explained, for example, by the increased demand in air travel, the further development of hub-and-spoke systems and the market penetration of low-cost carriers (Gudmundsson, 2004).

Obviously, there is a compelling need for a technological shift towards lower and zero-emission vehicles and for the development of alternative solutions for sustainable transport. The 21st century will most likely see the replacement of vehicles relying on the internal combustion engine by electric vehicles, including fuel-cell vehicles. At present, electric and fuel-cell cars remain expensive for their performance. While research is closing the cost-competitiveness gap, improvements can be made to the internal combustion engine where the fossil fuels they use can be complemented with biofuels.

The European 'green cars' initiative focuses on five main areas of research:

- electric and hybrid vehicles,
- hydrogen fuel cells,
- biofuels,
- improvements in the internal combustion engine and
- logistics.

Funds provided under this initiative come from two main sources: grants from the EU's seventh research framework programme (EUR 1 billion) and loans from the European Investment Bank (EUR 4 billion).

In addition, the fuel cells and hydrogen joint technology initiative brings together resources from the EU and the private sector to accelerate the development and broad market introduction of these two technologies (ERTRAC, 2007).

The development of modern aircraft, road vehicles, rail and maritime fleets and new logistic concepts linked with the renewal of fleets can be considered the major determinants of increasing energy efficiency. However, external incentives – determined by markets and policies – strongly affect the time taken for fleet renewal and modern logistics concepts to take root.

Another crucial problem related to the negative effects from transport is the noise. Noise created by transport has been attracting increasing attention in recent years, and has lead to various measures at EU level concerning the harmonization of noise assessment and management, market access requirements for certain vehicles and equipment, railway interoperability specifications and rules on operating restrictions at airports.

Measures taken in road transport include the more widespread use of 'quieter' car tires with low rolling resistance (for increased fuel efficiency) and the use of noise-absorbing road surfacing as well as mitigation measures such as the construction of noise barriers along roads through or near residential areas.

Railway industry measures cover infrastructure operators (e.g. the acoustic grinding of rails, noise barriers, speed limits at night) and train operators (e.g. replacement of cast-iron brakes with low-noise composite materials). Newly constructed high-speed train tracks are mostly built with noise barriers along sensitive areas.

Aircraft are particularly noisy and they largely affect areas at and around airports, even if modern aircraft are 10 to 15 decibels quieter than previous generations of aircraft. Current legislation provides for the reduction of airplanes' noise at source, land-use planning and management measures, noise abatement operational procedures and operating restrictions. Another area offering potential for reducing aviation's environmental impact is the improvement of air traffic management.

Many Europeans still remain exposed to dangerously high levels of air and noise pollution. Transport itself is suffering from the effects of climate change and necessitating adaptation measures. Global warming resulting in a rising sea level will amplify the vulnerability of coastal infrastructures, including ports. Extreme weather events affect the safety of all modes. Droughts and floods pose problems for inland waterways.

Transport activities give rise to environmental impacts, accidents and congestion. In contrast to the benefits, the costs of these effects of transport are generally not borne by the transport users. The internalization of external costs means making such effects part of the decision-making process of transport users. Besides, the measures for improving the use of existing infrastructure are related to shift towards more ecological modes of transport. It could be achieved through internalization of the external costs for transport. With regard to this the infrastructure charges could be considered as economic instruments for decreasing oil consumption and pollution.

The European Commission released in 2008 a handbook with estimates of external costs in the transport sector (Maibach, et al., 2008). The handbook, jointly prepared by several transport research institutes, summarizes the state of the art as regards the valuation of external costs. The Commission intends has make use of this handbook to prepare a communication on a strategy to internalize the external costs for all modes of transport.

Expected results from the initiative are related to:

- the opportunity for balancing modal split while considering for externalities, which will lead to more efficient impact of charges on the use of the infrastructure;
- more efficient use of the transport infrastructure - will lead to reduction in budget expenses for infrastructure, healthcare and environment as well as to direct financial benefits for lower taxes.

The net effect in commercial sector is expected to be positive and direct effect from higher infrastructure charges to be neutralized by decreasing costs for congestions, accidents and by all possible reductions in taxes given by the governments.

3 MANAGEMENT STRATEGIES FOR ACHIEVING THE STRATEGIC GOALS FOR ENERGY EFFICIENCY

Most transport improvements are designed to reduce transport costs. This can often have a beneficial impact on the environment, for example, by reducing fuel consumption and air pollution. Almost all transport projects are subject to at least a partial assessment. The increasingly stringent application of these procedures has encouraged the design of projects that are sensitive to energy efficiency concerns and that mitigate any directly adverse environmental impact. Furthermore, transport projects, or project components, are increasingly going beyond avoiding direct harm and focusing more positively on environmental improvements. These projects address the immediate and direct effects of transport. In such cases the fundamental question is what should be the main accent in transport policy and management?

Mamagement strategies in transport are, in principle, based on a full cost-benefit analysis incorporating both transport and environmental objectives (World Bank, 2008). They include short-term management and pricing instruments and long-term strategic instruments as the context for identifying investment actions. Still, further research will be required to identify critical environmental effects and to determine the efficacy of different interventions. In the interim, an appropriate framework for achieving energy efficient and environmentally friendly development of transport would include:

- ***Strategic and structural actions,*** including the creation of economic incentives for sensitive behavior regarding energy efficiency, would be of a high priority. Although their effects may be slow to come to fruition and may be politically and administratively difficult to be implemented, they are the critical and pervasive basis for sustainable transport development. Within that strategic framework, some priority problems can be identified where the benefits of making improvements

are judged to be very high, particularly because they are seriously life- and health-threatening.

- ***The most appropriate technology*** should be selected on the basis of relative energy efficiency, in the context of the main problems in transport, taking into account what the companies can afford and effectively implement. This often means that the actions with the highest priority are not those attempting to impose "state-of-the-art" standards or technologies but those that make more immediate, implementable changes in the way in which existing equipment is used.

Transport system that falls into disrepair because it is economically unsustainable fails to serve the needs of the clients and often have environmentally damaging consequences. Hence, there are some management instruments which serve all of the dimensions of sustainability in a synergic way, generating "win-win" solutions. These include measures aiming to improve asset maintenance, charging for external effects, technical efficiency of supply, safety, contract design, and administration. Increased mobility in the EU counties, particularly private motorized mobility, typically increases measured GDP but damages the environment.

CONCLUSIONS

There is growing urgency for the transport sector to mitigate its negative impact on the environment. The respond to the goals of the EU Sustainable Development Strategy and the aim to reduce transport's environmental impacts involve progress towards a number of environmental policy objectives. Lowering consumption of non-renewable resources is essential for all aspects of transport systems and their use. The undesired environmental consequences of transport activity will require further action in particular on noise, air pollutant emissions and greenhouse gas emissions. EU legislation sets requirements in many of these areas but these will require assessment and updating in the future.

Besides, policy-makers are facing demands to meet the changing mobility needs of citizens in ways which are economically, socially and environmentally sustainable. Cities need efficient transport systems to support their economy and the welfare of their inhabitants. Around 85% of the EU's GDP is generated in cities. Urban areas face today the challenge of making transport sustainable in environmental (CO_2, air pollution, noise) and competitiveness (energy efficient) terms while at the same time addressing social concerns. These range from the need to respond to health problems and demographic trends, fostering economic and social cohesion to taking into account the needs of persons with reduced mobility, families and children (DG-TREN, 2009).

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Received for publication: 29.01.2014
Revision received: 19.06.2014
Accepted for publication: 05.07.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Nikolova, C. (2014, 07 15). Management strategies for achieving energy efficient and sustainable transportation system. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 159-172. doi:10.12709/mest.02.02.02.17

*Style – **Chicago** Fifteenth Edition:*

Nikolova, Christina. 2014. "Management strategies for achieving energy efficient and sustainable transportation system." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 159-172. doi:10.12709/mest.02.02.02.17.

*Style – **GOST** Name Sort:*

Nikolova Christina Management strategies for achieving energy efficient and sustainable transportation system [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 159-172.

*Style – **Harvard** Anglia:*

Nikolova, C., 2014. Management strategies for achieving energy efficient and sustainable transportation system. *MEST Journal,* 15 07, 2(2), pp. 159-172.

Style – **ISO 690** Numerical Reference:

Management strategies for achieving energy efficient and sustainable transportation system. **Nikolova, Christina.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 159-172.

MEST Journal
DOI 10.12709/mest.02.02.02.18

STATISTICAL RESEARCH WITHIN THE PERFORMANCE TESTING IN THE CRITICAL TRANSPORT INFRASTRUCTURE

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JEL category: **A23, I23, L26**

Abstract

In the last years crisis management is dealing with many important problems. The current threats of countries, inhabitants, property and natural environment belongs to the most important issues. The extreme weather negative impacts and adverse consequences caused by accidents in technological processes and transport have become more and more frequent and intense events. In addition danger of extremism and terrorism, aimed at important object, is also expanding. In developed countries these objects are parts of critical infrastructure. Critical infrastructure sectors in different countries are not unified. In most of the countries the critical infrastructure includes information technologies, energy and transportation. In Slovakia the transportation sector consists of subsectors – road, water, aviation and railway transport.

The railway transport is an important subsector of the critical infrastructure. Its importance is unquestionable especially in the field of mass transportation and transportation of bulk substrata. Traditional methods, which were used in the past, were based on experience. The actual possibilities of computer technique enable to explore the railway transport performance through expert information systems. They are based on detailed statistical research. The paper will present the results of the researchers of the Faculty of Special Engineering, University of Žilina focused on the selection and testing the suitable distribution for stochastic events in railway transport. Based on the extensive statistical research the authors demonstrate that the driving time of trains in line sections is more suitable to be considered as random variable with Erlang distribution. The mentioned theoretical findings were used in development of software tool ASTRA that simulates railway transport in emergency situations.

Keywwords: Critical transport infrastructure, statistical research, risk management.

1 INTRODUCTION

The issues of critical infrastructure protection are dealing with quite a number of limitations especially with assessment of economic

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effectiveness. Assignment of the railway objects among the critical infrastructure elements is demanding multidiscipline task. In standard conditions we would suppose that it is sufficient to select objects that meet two or three defined criterions (length, intensity, capacity) and these can be indicated as critical infrastructure elements. But really this approach has to be completed by evaluation of vulnerability and other aspects. In the process of selecting prospective elements of critical infrastructure we use also various mathematical methods. Simulation of railway traffic on line sections eventually simulation of renewal of specific objects are part of them. The contents of this paper are focused on the long term experience of authors within development of simulation program dealing with modelling railway transport on railway line sections.

The statistic investigation of the train movement in the railway line section forms a part of contemporary approaches to the designing and modernisation of the railway lines. It has become more important above all in the application of methods dealing with the mass service and simulating of railway traffic. (Dvorak, Novak, & Leitner, 2013)

2 THE RAILWAY TRAFFIC AS A SYSTEM OF MASS SERVICE

The railway traffic is being influenced by a series of external influences, the effect of which is not permanent, but accidental and temporary, without possibility of their simple mathematic formulation. Under influence of the damages in driving vehicles, wagons and technological appliances as well as under the effect of human factor and natural impacts the deviations in the train movement occur. Majority of deviations is represented by the delays and only a minimum of them arises e.g. by the shortening of riding times. So can be stated that both the individual riding times and the occupancy of the track sections will be random variables. (Novak, Dvorak, Leitner, & Luskova, 2013)

In the available calculations the railway traffic is most often classified as a system of mass service ***M/M/n***, which represents the Poisson´s process of entry and the exponential distribution of the service time.

The time gaps t_j between the individual entries of trains into the track section represent the time intervals between the entries of the demands into the system of mass service.

The period of service is the period of occupancy t_{obs} of the track section by a concrete train whereas

$$t_{obs} = t_j + t_{tech} \quad (1)$$

where:

- t_j is the riding time through the section,
- t_{tech} is the operational technological times.

Though, generally known is only the relation between the average values of following quantities

$$t_{obs,p} = \eta \; t_{i,p} \quad (2)$$

where:

- η represents the working load of the track section,
- $t_{i,p}$ represents riding time of the track section.

These approaches are being introduced by majority of authors. Calculations with the average values, though, restrict greatly the mathematic possibilities of solution. (Novak & Luskova, 2012)

3 FORMULATION OF THE PROBLEM AND HYPOTHESIS FOR ITS SOLUTION

The riding time of a train through the track section is the basis variable. Being statistically valuated, both minimal and maximal values are found. This suggests the application of a theory on 6σ. This theory also deals with minimal and maximal (real) valuables of a random variable, but normally distributed. The theory guarantees, that ***99.73 %*** of all the values will be found in the very range $\pm 3\sigma$ from the average value (σ - standard deviation)

The application of this theory is as well supported by [2] the statement that "... models with the Γ distribution of random variable are suitable for the situations where the minimal value of an interval is strictly given, e.g. by an interval of the following ride by the maximal permitted speed, and the

addition is not sharply separated. It is enough to use the Erlang´s distribution considering the parameter **"a"** as an integer".

However, another hypothesis suggests the possibility of replacement of the exponential distribution of the section time by the Erlang´s distribution with the application of the theory on ***6σ.*** (Brandalik & Kluvanek, 1986)

Very interesting is the term of maximal permitted speed in comparison with the traditional calculations, which use so called "average" speed. The maximal permitted speed will correspond to the minimal riding time $t_{j,min}$, the adequate minimal time of engaging the track section $t_{obs,min}$, and when taking into account the allowable working load η also the gap-length between the rides of two trains $t_{i,min}$.

4 VERIFICATION OF THE HYPOTHESIS ON THE ERLANG´S DISTRIBUTION OF THE RIDING TIME

To verify the accepted hypothesis many wide statistic investigations of riding time have been made on 16 track sections during 20 days on the basis of the realized railway transport diagrams. The total number of values was nearly 11 000. The ridings time in individual track sections have been measured separately for slow, freight and express trains. (D-24, 1966) By each statistic set were calculated:

- x_p - the arithmetic mean-average value,
- s^2 - dispersion variance,
- σ - standard deviation.

For the class calculation of distribution of frequency the following formulae were used:

$$x_p = \frac{1}{n}\sum_{i=1}^{k} n_i\, x_i \qquad (3)$$

$$s^2 = \frac{1}{n}\sum_{i=1}^{k} n_i\,(x_i - x_p) \qquad (4)$$

$$\delta = \sqrt{s^2} \qquad (5)$$

where

- n - is the total frequency of the set (for relatively n = 100),
- n_i - frequency of ***i*** – class,
- k - number of classes,
- x_i - class symbol.

With respect to the above given assumption and preliminary courses of density curves in all sets has been measured the approximation by Erlang´s and exponential distribution. To verify the assumption the χ^2 test of goodness of fit has been used, where as the test criterion serves the random variable in the formula:

$$\chi^2 = \sum_{i=1}^{k} \frac{(x_i - n\,p_i)^2}{n\,p_i} \qquad (6)$$

where

- k is number of classes,
- p_i - probability of ***i*** - the class in assumed distribution for the level of significance 0,05.

The values of assumption p_i for individual classes were measured according to the following relations:

– for the exponential distribution

$$p_i = \int_{x_{dol}}^{x_{hor}} e^{-\lambda x} dx \qquad (7)$$

– for the Erlang´s distribution

$$p_i = \int_{x_{dol}}^{x_{hor}} \frac{b^a x^{a-1} e^{-bx}}{a!} dx \qquad (8)$$

where:

- x_{dol} - is the class lower limit,
- x_{hor} - class upper limit,
- λ - flow parameter,
- ***a, b*** - parameters of Erlang´s distribution.

$$\lambda = 1/x_p \qquad a = x_p\, b \qquad b = x_p / s^2$$

The calculations of all the value were measured via computer according to own algorithm. The integral was calculated by the Simson´s method. Fig. 1 shows the histogram of frequency of riding times in one evaluated track section. It is obvious that the course distribution of riding times by slow, freight and express trains differ. (Černy & Kluvanek, 1991)

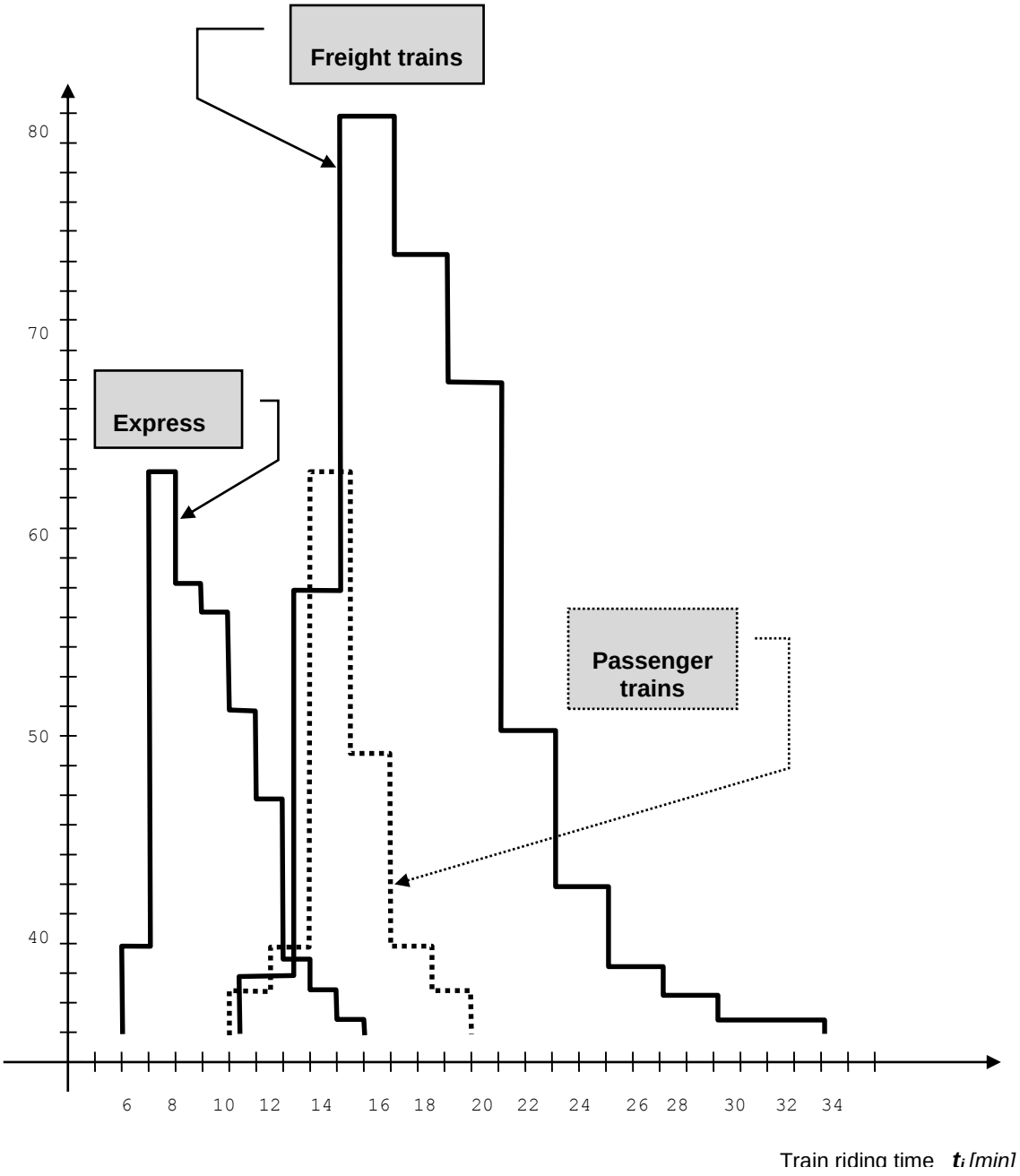


Fig.1 Histogram of frequency of riding times t_j through track section

It is unique that the course of distribution of riding times does not correspond to the exponential distribution. This has also been proved by the results of approximation which has confirmed the unacceptability of the statement on the exponential distribution, in respect to the extremely negative values of χ^2 test of goodness of fit table 1 Advantageous is the approximation by Erlang´s distribution where 16 values fit very well. We can state that the theoretical model of random variable with the Erlang´s distribution very suitably characterizes the tested quantity - the riding.

Table 1 The comparison of the evaluation results of statistic sets of riding times through the track sections

Track Section	$t_{p,j}$ [min]	s^2	δ	Division			
				Exponential		Erlang´s	
				χ^2_{emp}	χ^2_t	χ^2_{emp}	χ^2_t
Trenčianska Teplá - Dubnica	6.72	2.51	1.58	167,799	12.59	2.9346	11.07
Dubnica - Trenčianska Teplá	7.61	4.37	2.09	126,882	15.51	3.0423	14.0
Žilina zr. st. - Dolný Hričov	11.15	8.01	2.83	174,985	12.59	6.2845	11.07
Dolný Hričov - Žilina zr.st	11.33	7.94	2.82	173,404	12.59	4.3986	11.07
Turany - Kraľovany	12.77	10.67	3.27	161,440	14.07	4.0624	12.59
Kraľovany - Turany	14.46	13.77	3.71	159,276	15.51	4.0209	14.07
Ladce - Dubnica	15.58	14.23	3.77	188,277	15.51	6.6429	14.07
Dubnica - Ladce	16.15	12.17	3.49	209,072	15.51	3.6804	14.07
Krásno nad Kysucou - Čadca	16.15	13.94	3.73	185,922	15.51	2.5870	14.07
Čadca - Krásno nad Kysucou	16.18	11.54	3.40	234,728	15.51	12.3490	14.07
Vrútky - Varín	16.59	15.31	3.91	204,165	15.51	12.3490	14.07
Varín - Vrútky	17.49	15.62	3.95	201,880	15.51	7.0458	14.07
Púchov - Považská Bystrica	18.55	13.80	3.71	240,641	15.51	6.9021	14.07
Považská Bystrica - Púchov	18.62	15.18	3.90	225,724	15.51	7.5096	14.07
Lúky pod Makytou - Horní Lideč	19.93	24.17	4.62	205,412	15.51	11.8584	14.07
Považská Bystrica - Bytča	20.08	27.45	5.24	194,985	14.07	18.9283	12.59
Bytča - Považská Bystrica	21.10	44.04	6.64	140,420	14.07	14.6035	12.59
Horní Lideč - Lúky pod Makytou	22.92	58.71	7.66	98,234	15.51	3.0808	14.07

Remark: *The values in the tables are suitable for the values* χ^2 *in the test*

5 THE APPLICATION OF THE THEORY O 6 SIGMA

The courses of histogram and approximation show clearly that Erlang´s distribution is oblique left. Hence follows that neither the average value of the riding time $t_{j,p}$ will be in the position $\pm 3\sigma$ between the minimal and maximal values of riding times. For the application of the above given theory were chosen the theoretical assumptions according to *Fig.2.*

On the basis of above given theoretical assumptions and of the obtained statistic sets were calculated the values of the standard deviance σ and coefficient k_1 for the individual track sections according to the relation:

$$k_1 = \frac{t_{j,p} - t_{j,\min}}{\delta} \qquad (9)$$

The results of calculations are introduced in Fig.2. We were successful to prove that there does exist a relation between minimal and maximal values of riding time through track section, measured by the use of the standard deviation σ, coefficient $k_1 = 1.84$.

At the same time was proved the relation of the standard deviance and the average riding time as $\sigma = 0.25\, t_{j,p}$ and was derived the relation

$$t_{j,p} = 1.85 t_{j,min} \qquad (10)$$

Table 2 The survey of the measured obtained values σ and k_1 in the track section

Track section	Times of occupancy of the section		σ	k_1
	$t_{j,min}$ [min]	$t_{j,p}$ [min]		
Trenčianska Teplá - Dubnica	4	6.72	1.58	1.72
Dubnica - TrenčianskaTeplá	4	7.61	2.09	1.73
Žilina zr.st. - Dolný Hričov	6	11.15	2.83	1.82
Dolný Hričov - Žilina zr.st	6	11.33	2.82	1.89
Turany - Kraľovany	7	12.77	3.27	1.76
Kraľovany - Turany	8	14.46	3.71	1.74
Ladce - Dubnica	9	15.58	3.77	1.75
Dubnica - Ladce	9	16.15	3.49	2.05
Krásno nad Kysucou - Čadca	9	16.15	3.73	1.92
Čadca - Krásno nad Kysucou	9	16.18	3.40	2.11
Vrútky - Varín	9	16.59	3.91	1.69
Varín - Vrútky	10	17.49	3.95	1.90
Púchov - Považská Bystrica	11	18.55	3.71	2.04
Považská Bystrica - Púchov	11	18.62	3.90	1.95
Lúky pod Makytou - Horní Lideč	10	19.93	4.62	2.02
Považská Bystrica - Bytča	11	20.08	5.24	1.73
Bytča – Považská Bystrica	11	21.10	6.64	1.52
Horní Lideč - Lúky pod Makytou	11	22.92	7.66	1.69

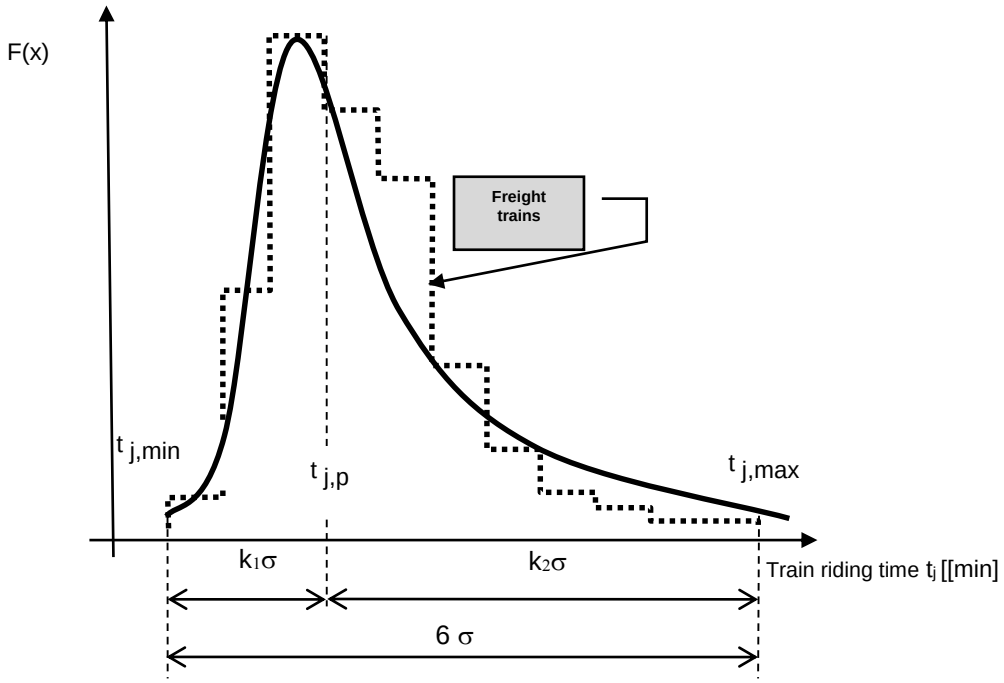


Fig.2 Theoretical outcomes for the calculation of the position of the average riding time $t_{j,p}$

To verify the above given conclusions was evaluated the dependence of the average and minimum riding time in the mentioned track sections as

$$k_3 = \frac{t_{j,p}}{t_{j,\min}} \qquad (11)$$

The final value k_3 **= 1.83** confirms for 99 % the correctness and usability of the calculation of the average riding time according to the relation. (Danek & Vonka, 1984)

6 CONCLUSION

On the basis of an extent statistic evaluation it is more accurate and suitable to characterize the riding time of the trains in track section t_j as a random variable with the Erlang´s distribution. On the basis of the derived relations and performed calculations and with the application of the theory **6σ** we were successfully to prove that there does exist a relation between minimal and average values of the riding time through the line section:

$$t_{j,p} = 1.85 t_{j,min}$$

The more accurate characterization of the mentioned constant is possible on the basis of statistic evaluation of further track sections eventually separately for one-way and both-way traffic, respectively for various types of traction in operation.

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ACKNOWLEDGEMENT

This paper was supported by project:
APVV 0471-10 *Critical Infrastructure Protection in Sector Transportation*

Received for publication: 31.01.2014
Revision received: 03.06.2014
Accepted for publication: 23.06.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Novak, L., & Luskova, M. (2014, 07 15). Statistical research within the performance testing in the critical transport infrastructure. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 173-180. doi:10.12709/mest.02.02.02.18

*Style – **Chicago** Fifteenth Edition:*

Novak, Ladislav, and Maria Luskova. 2014. "Statistical research within the performance testing in the critical transport infrastructure." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 173-180. doi:10.12709/mest.02.02.02.18.

*Style – **GOST** Name Sort:*

Novak Ladislav and Luskova Maria Statistical research within the performance testing in the critical transport infrastructure [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 173-180.

*Style – **Harvard** Anglia:*

Novak, L. & Luskova, M., 2014. Statistical research within the performance testing in the critical transport infrastructure. *MEST Journal,* 15 07, 2(2), pp. 173-180.

Style – **ISO 690** Numerical Reference:

Statistical research within the performance testing in the critical transport infrastructure. **Novak, Ladislav and Luskova, Maria.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 173-180.

MEST Journal
DOI 10.12709/mest.02.02.02.19

SOME POWERFUL TECHNIQUES FOR INTANGIBLE INCENTIVES EMPLOYEES

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JEL category: **D2, D23**

Abstract

We investigated the methods of increase of labor productivity. The focus was on the motivation of employees to work more and better. We have performed a study of scientific sources, modeling and testing some techniques. The orthodox view is that the managers prefer to use the material motivation of the personnel as the main tool. To the best of our knowledge there are no results in the literature regarding how to rapidly increase productivity without large investments in motivation. Literature review shows that experts in motivation support the methods of material motivation.

We found in literature that 12% of employees have money as the main motive of work only. In other words the methods of intangible incentives are important for 88% of employees.

We chose 2 powerful techniques of intangible incentives: competition and training.

Competition shows growth of the educational productivity to 28.22%. It was not required expenditures of money or other resources.

The economic results of our training are the following:

- *the purpose of the order was achieved as the speed and quality of work of managers grew by 57-96%,*
- *comprehensive approach to the development of managerial skills and competencies brought additional 180 man-days,*
- *saving of budget staff development amounted to $30,500 through the use of new patented technologies of training managers.*

That is why we suggest competition and training as a powerful techniques of intangible incentives.

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Keywords: *labor productivity, personnel, employees, intangible incentives, methods of motivation, techniques of motivation*

1 INTRODUCTION

Do you know why Russia lags behind Western Europe in productivity 3-4 times (Smirnov, 2011, p. 1) and growing so slowly? Because such talented scientists, as A.K. Gastev, P.M. Kergencev, A.A. Bogdanov, O.A. Ermansky were not in demand. And the Russian schools of labor organization has been replaced by an administrative management style (Smirnov, 2011, p. 1). Intergenerational continuity was broken. In Russian universities professors teach methods of work organization, which are more than 50 years. Therefore, the production managers do not have knowledge about how to increase productivity.

Consequently, many companies are not able to get the best performance from their employees. Managers use ineffective methods of control (Davenport, 2011, p. 2). Therefore, Russia has low labor productivity. The problem is the development of powerful techniques for rapid and significant growth of labor productivity.

The authors recently started a research program to find ways of additional motivating of employees. We want to help to businessmen and managers to have employees working more and better. Analytical techniques are needed that can predict the behavior of the staff in the use of intangible incentives.

Analytical techniques have been extensively applied to the study of the working conditions of the personnel, in particular with respect to efficiency of the methods of motivation. However, little research has described of practical methods of intangible incentives.

More recent research [(Cvetkov, 2008) (Center-YF, 2012) (Yandex.Direkt, Sposoby povyshenija proizvoditel'nosti truda/ Konsul'tant, 2012) (hw4, n.d.)] has occurred in the field of approaches to increasing productivity. These works show that productivity can be increased through large investments. Other authors [(Gorin, 2006) (Yandex.Direkt, Motivatsiya personala, 2012) (Kak povysit' proizvoditel'nost, 2013) (Shatova, 2014)] have found an opportunity to apply the intangible incentives.

To the best of our knowledge there are no results in the literature regarding how to rapidly increase productivity without large investments.

The aim of the present work is to analyze the effectiveness of different methods of intangible stimulation of the personnel. The assumptions (Yandex.Direkt, Motivatsiya personala, 2012) are used as a starting point.

The results of the research are encouraging. And its show that the companies can increase productivity. It must using some powerful techniques for intangible incentives of employees.

The results of the research are applied in the practice of Russian and other companies. They can be useful for companies seeking to raise labor productivity of employees. Our results are very important in the beginning of world crisis. Managers will rejoice in the results of work of employees and the success of their Company when they can learn and implement our intangible incentives techniques.

2 LITERATURE REWIEW

For more than 100 years researchers have been observing of labor productivity.

Frederick Winslow Taylor found that all people are divided into two classes (F.W. Taylor about the principles of scientific management, 1911). Representatives of the first class are committed to the speedy completion of the work. They do not waste time in vain and not shy away from their responsibilities. People of the second class are characterized by low productivity is the norm of work and behavior. Thus, the employee may develop from the second class to first class. Managers and businessmen should create conditions for that.

However F.W. Taylor believed that the work must be paid by results. In his study, salary is higher than more products produced worker and the more normalized work it has done (Cvetkov, 2008). Although the author proposed to determine the normal conditions for work (convenience workplace, sanitary and hygienic conditions, the continuity of the provision of raw materials, tools,

and so on) implementation of his ideas were met with resistance from both the employees and managers.

G. Ford continued F. Taylor's ideas in the area of production organization. He formulated the main principles of organization of production and, for the first time, separated the management from the main work (Cvetkov, 2008).

In the USSR the system of F. Taylor was interpreted in the A.K. Gastev's studing as a scientific organization of labor (Smirnov, 2011).

F. Taylor's principles and approaches are quite applicable in our time. They can be used where the labour process can be dissected into several simple operations and there is no possibility to replace people with machines.

In (Center-YF, 2012, p. 2) the most important task of the enterprise is the continuous search and implementation of provisions of productivity growth.

Today Russia has the following distribution of approaches to increasing labor productivity (Center-YF, 2012, p. 12):

- improving the technical level of production (mechanization and automation of production; introduction of new types of equipment; the introduction of new technological processes, improvement of structural properties of the products; increasing the quality of raw materials and new construction materials);
- improving the organization of production and labor (improvement of standards and service areas; reduction of the number of workers that do not follow the rules; streamlining of the management structure; mechanization of accounting and computing work; change working period; increased specialization of production);
- change of the external, natural conditions (change geological conditions of extraction of coal, oil, ore, peat; change the content of useful substances);
- structural changes in production (change the weights of certain products; change the complexity of the production program; a change in the share purchase semi-finished products and components; the weight of new products).

However, performance management of employees in the work (Center-YF, 2012, p. 2) is an integrated process built on three positions:

1. performance measurement - i.e. assessment of employees.
2. employee development.
3. tangible encouragement for those who are the most effective.

You see, the algorithm of actions of managers focuses on money and other material values (№3).

It was speculated by author (Yandex.Direkt, 2012, p. 1) to use economic and management approaches for enhance productivity:

- Economic approach is aimed at modernization of production, optimization of production processes, reducing the cost of labour (working time) on production of a unit of production and (or) issuance of additional production quantity per unit of time, etc.
- Management approach aimed at increasing the involvement of the staff, orientation members for effective and productive work. One of the significant factors affecting the increase of the level of employee engagement, is a well-functioning system of remuneration.

The author of this work offers take into account the factors of production and human resources equally. And we don't know which one to give preference in practical work.

Let's look at the causes of low productivity are listed in the work (hw4, pp. 1-2):

- bloated the administrative apparatus;
- bloated staff;
- a large number of control, inspection services;
- ill-conceived management decisions;
- poor work organization.

These reasons relate to the economic approach. Their elimination is aimed at reducing the cost of labor (working time) to produce a unit of output (Yandex.Direkt, Sposoby povyshenija proizvoditel'nosti truda/ Konsul'tant, 2012, p. 1).

Enumeration of these reasons does not explain what approach is better: economic or managerial?

G. Gorin published an interesting thought answering this question. He in the (Gorin, 2006) explained that the system of personnel motivation cannot be called effective if it is based on the action of the material factors (such as salary, premiums, and bonuses) only. We think this idea is very good. Because it does not require significant capital and financial investments.

In paper (Yandex.Direkt, Motivatsiya personala, 2012) provides a detailed description of the methods of motivation. There are several theories of motivation (Abraham Harold Maslow, David Clarence McClelland, Frederick Irving Herzberg, Victor Vroom, Douglas McGregor and others). The theory is considered in (Yandex.Direkt, Motivatsiya personala, 2012) do not exhaust the full list of the theories of motivation.

From a practical point of view, the causes passivity and low return of workers are given in (Yandex.Direkt, Motivatsiya personala, 2012, p. 14):

- excessive intervention by the chief;
- the lack of psychological and organizational support;
- lack of necessary information;
- the lack of attention of the head to the needs of a subordinate;
- the absence of feedback, that is, the ignorance of the worker of the results of their work;
- inefficient decision of the head office of the problems of the employee;
- incorrect estimation of the employee's supervisor.

Economic and managerial approaches are combined in this list of reasons for low productivity.

Three systems are available for elimination of these reasons:

- the system of direct tangible incentives (Yandex.Direkt, Motivatsiya personala, 2012, p. 19);
- the system of indirect tangible incentives (Yandex.Direkt, Motivatsiya personala, 2012, p. 20);
- the system of intangible incentives (Yandex.Direkt, Motivatsiya personala, 2012, p. 22).

Author of (Kak povysit' proizvoditel'nost, 2013, p. 1) considers the methods of non-material motivation and recommends the strengthening of labour discipline; improving working conditions; sensitivity management personnel; the inclusion of workers in the program of complex quality management and using of flexible working time for a given groups of employees.

The specialists of the company Pricewaterhouse Coopers formed a system of intangible incentives on (Yandex.Direkt, Motivatsiya personala, 2012, p. 32). They developed a classification of forms of intangible incentives also. Two parameters were assumed as a basis of this classification. It is the volume of expenses for organization of stimulation and value of the methods for employees. The matrix can serve as a map to choose the tools intangible rewards based on the needs of a specific company (Yandex.Direkt, Motivatsiya personala, 2012, p. 33).

In paper (Yandex.Direkt, Motivatsiya personala, 2012) the regularities identified in accordance with different motivation theories (A. Maslow, D. McClelland, F. Herzberg, L. Porter, E. Lawler etc).

First, physiological needs come first. There are clean air, water, food, warmth, the need for security and stability updates.

Next, the spiritual needs are. These needs are in a meaningful reference group and in a social relationships.

Third, the need for recognition, prestige and respect are.

And finally, the need for self-expression completes the chain needs.

The main types of motivation proposed in (Yandex.Direkt, Motivatsiya personala, 2012, p. 41) based on the above needs.

In Russia much research in recent years has focused on methods of tangible incentives. Here we refused to consider methods of tangible incentives specifically. Our reason for refusal is the results of a new study (Shatova, 2014).

A latest paper (Shatova, 2014, p. 1) showed that 40% of employees in Russia are not motivated**.** This study made by the Hay Group. The company Hay Group examines the efficiency of the staff in the different countries of the world regularly. In Russia the study is based on data obtained from more than 60 Russian companies from various industries. This Study covers more than 140 thousand employees.

The survey results clearly indicate that for Russian companies it is critical that managers have invested more time and effort in contact with staff (Shatova, 2014, p. 2). Expected results of such contacts is to support employee motivation.

Because of these findings we hypothesize that 2 powerful methods of tangible incentives of the proposed list (Yandex.Direkt, Motivatsiya personala, 2012, pp. 42-43) should be used.

2.1 Metodology

Two powerful techniques of intangible incentives were obtained by studying the experience and making the experiment. Our key research technique is to analyze some scientific sources and the behavior of a person under different terms of motivation. We used well-documented and powerful methods of analysis. All of our methods were economically justified.

While the exact methodologies used vary from field to field, the overall process is the same. First, we define the question – what exactly we are trying to find out. We use the scientific method to search for relationships between tangible and intangible incentives. In general we learn from 50 to 100 scientific sources on an interesting topic. After that we choose the hot ones for a detailed analysis. We welcome alternative and non-traditional positions of researchers.

Next comes the formation of a hypothesis, which is an idea or explanation for a situation based on what is currently known.

The next stage of the method is the design of an experiment which will allow this hypothesis to be tested. Usually a primary run of the experiment is conducted, and any changes to the experimental conditions made. Experiments are designed so that one or two variables are changed. And the effects of the change observed. In each experimental run data collection takes place, followed by data analysis.

Finally the data is interpreted and from this, we are able to draw conclusions. And we create a new powerful methods of motivation on the basis of theoretical analysis and best practices.

The starting point for further analysis remain assumptions published in (Yandex.Direkt, Motivatsiya personala, 2012). One of the main ideas of this publication suggests that intangible incentives is a good supplement to the intangible one. The company must provide the workers with the market average salary and comfortable working conditions (Yandex.Direkt, Motivatsiya personala, 2012, p. 29). It is certainly hard to see a plausible alternative to this idea still if we look from other points of view [(Lapusta, 2001) (Vesnin, 2001) (Vesnin, Upravlenie personalom v shemah: ucheb. posobie, 2014)].

First, M.G. Lapusta and his colleagues were quite right when he said that salary is a form of economic realization of the right of employees to its resource work (Lapusta, 2001).

Second, in 2014 V.R. Vesnin (2014) have defined the purpose of stimulation is not encourage to work. The aim of motivation is to get to do more and better than it is provided by the standard tasks.

Third, studies (Vesnin, 2001) shown that usually motivations of people who want to work are the following:

- firstly, 45% prefer the glory,
- secondly, 35% prefer satisfaction with the content of the work,
- thirdly, 8% prefer the power.
- and finally, the rest 12% has money as the main motive of work only!!!

In other words the methods of intangible incentives are important for 88% of employees. It is a reason why tangible incentives cannot ensure high productivity. Do you remember that 40% of employees in Russia are not motivated (Shatova, 2014, p. 1)?

These results [(Shatova, 2014) (Lapusta, 2001) (Vesnin, 2001) (Vesnin, Upravlenie personalom v

shemah: ucheb. posobie, 2014)] allow us to take an alternative view. We assumed that the main incentives are intangible factors. We believe that the company burn money, if based on the tangible methods of personnel motivation only.

That is why we carefully considered the list of methods of non-monetary motivation (Yandex.Direkt, Motivatsiya personala, 2012, pp. 42-43). And we chose 2 powerful methods of intangible incentives should be used by companies. These 2 techniques will be strengthened further**:**

1. competition,
2. training.

Let us consider first the powerful techniques of intangible incentives called "competition".

2.2 Competition

2.2.1 Case 1

In February 2014, we started the competition at our University. 34 students participated in the experiment. First-year students of speciality "management" were selected. They study the subject of "Organizational behavior". And they pass the control of academic results each month. The boundaries of the scale of academic results is applied from 0 to 10**.**

What changes we made? We just warned students that apply competition (ranking) for the results of each test. And we said that the results will be compared with each other.

Previously we just had a control test. And we announced assessment to students. Now we've started to compare different academic results of the students.

For the first time the results of the control test were included in the competition (rating) **in** March 18, 2014. The average score for the group of students was 5.35 units. Our supervision showed a high interest of the students to their place in the group. Some students asked to rewrite test. Repeat the test results were not taken into account in our experiment.

April 15, 2014 rating (competition) was drawn up for the second time. The average result for the group of students was 6.86 units.

As a result, the growth of the educational results within 1 month was 1.51 units (from 5.35 to 6.86). This is 28.22%.

Growth of the educational results to 28.22% was not required expenditures of money or other resources. We have provided students with access to the results of the rating. Each student wanted to take a higher place. And they worked with more efficiency. In other words, the desire of students to win in the ranking was the main resource of motivation.

Expenditure of financial and other resources is no.

Because we have experience of running of competition in the form of ranking, we expected the growth of the educational results.

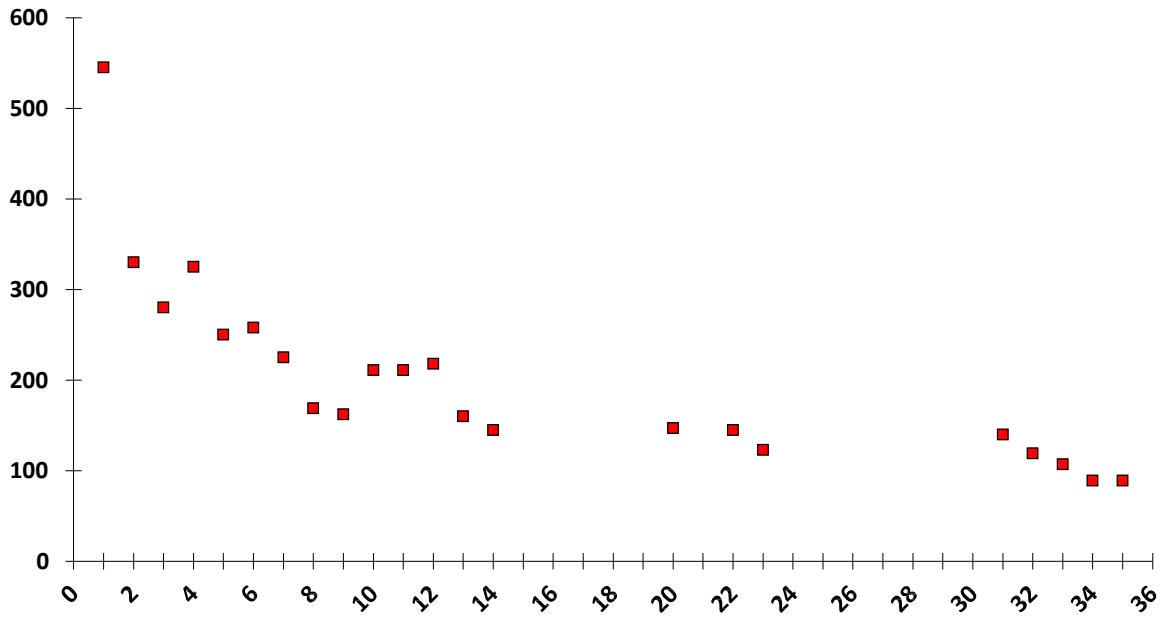
2.2.2 Case 2

Some years ago one of us organized a competition (rating) in the Krasnodar region (Russia). The purpose of the administration of Krasnodar region was to improve the productivity of research work in the region. The aim of the rating was to increase the share of young scientists in the age structure of the scientific and pedagogical staff. Therefore, the rating was organized for the leading researchers of the Krasnodar territory.

Five criteria were selected for the rating by method statistics: the total number of publications (A1); the number of scientific publications (A2); the number of international publications (A3); the number of innovations used in the Krasnodar region (A4); the number of PhD-thesis defense, which was led by scientist (A5).

A computer program to evaluate the effectiveness of scientific work was made. As we receive it?

First, we have collected statistical data on eight criteria. Then we drew a statistical graphs for each of the analyzed criterion. A fragment of the graph R=f(A1) is shown in Fig. 1



.Fig.1 Total number of publications (Y) and place in the rating of (X)

At last, the empirical formula for the calculation of the rating of researchers was withdrawn by the regression analysis. All estimated coefficients were inspected by the Student's criterion. 3 criterias we removed after the inspection.

You can see that the coefficient for the PhD-thesis defense was the most high:

R=0,13×(A1+A2)+0,96×A3+1,38×A4+3,17×A5

The correlation coefficient was R = 0.983.

The sum of points was used to assess the effectiveness of the work of scientists. The results of calculations were placed by the computer program in decreasing order of the score. The administration of Krasnodar region awarded the winners of the rating by honorary badge.

The increase in the number of young scientists was:

- for the first year from 436 to 610 people, that is ~40%;
- for the second year from 610 to 732 people, that is ~20%;
- for the third year from 732 to 896 people, that is ~20%.

As a result, the number of young scientists grown in ~2 times in the Krasnodar region for 3 years (from 436 to 896 people).

We did not make large investments. 2 times a year we collected reports on the results of scientific work of leading scientists. We treated them according to the elaborated computer program and published in the open press. Several of the winners of the rating were awarded by honorary badge of the Governor of Krasnodar region.

Expenditure of financial and other resources are close to zero.

2.2.3 Competition: theory and practice

Nothing can detract from the central fact that the competition is useful for each company. However what is even more surprising is that the competition is useful for every employee.

We would say that the following statement is itself sufficient to explain the usefulness of the application of competition for managers and businessmen. "The spirit of costatellus is innate quality of any child. And the attraction of risk and mercantile interests appear as the child is growing and gaining experience", - stated in (Vajke, 1994). Experiences competing give a splash of deep human emotions and sexual needs (Okulich-

Kazarin & Sadykova, 2007, p. 9). It is an unconscious desire to meet the psycho-biological needs directs the participants of the competition. Amazingly, but the power of the desire to competition may not depend on the magnitude of financial gain or financial loss (Vajke, 1994).

Please be attention: the reality is that man seeks to competition always and everywhere [(Vajke, 1994), (Okulich-Kazarin & Sadykova, 2007, p. 9)]. If the employee does not compete on the job, he will compete outside of work. People will spend their energy, playing sports and gambling. Look how many people play computer games and play in the casino! People could devote the competition at work this energy, this emotion, this time. People earn money, competing at work. People spend money, competing outside of work.

Responsibility of managers and businessmen is to organize a competition at work.

Responsibility of managers and businessmen is to save people from unknowingly losing money.

Responsibility of managers and business owners is to enable people to earn money.

If managers and businessmen do not use the competition, they burn the money.

The atmosphere of competition in the company stimulates I-status of “Child” to the manifestation of a spontaneous activity and creativity (Bern, 1992). Competition stimulates development of creative activity, initiative, innovation and responsibility [(Samygin, 1998), (Slastenin, Isaev, Mishhenko, & et al, 2000)]. Involvement of employees in the struggle to achieve the best results raises behind to the advanced level.

It doesn't matter how many criteria you use when organizing competitions. We have proved that benefit to the company will bring any number of criteria. Choose economically reasonable number of criteria for the rating.

Maintaining a high level of motivation is achieved by summarizing competition 12-15 times a year (Shherbakov, 1996).

Also we use "short" competition in the classroom. "Short" competition is a competition within 15-30 minutes. Description of the methods of holding "short" competition is beyond the scope of this paper.

2.3 Training

2.3.1 Case 3

Recently we carried out the order of the Moscow data center of Russian Railways. The purpose of the order was to increase a labour productivity of managers. The goal is achieved through training 40 managers. Two groups of 20 people were formed. They are trained by the training of a new generation. Each group was intensively studied for 18 hours.

The average growth of personal competences amounted to 40 managers:

- focus on results - 63%;
- attentiveness - 60%;
- leadership - 16%;
- creativity - 420%;
- logical thinking - 66%.

The average growth of managerial competencies amounted to 40 managers:

- the ability to work according to plan - 57%;
- the ability to allocate the main thing - 82%;
- tasks to the deadline - 57%;
- find the information they need - 96%.

The economic results are the following:

- the purpose of the order was achieved as the speed and quality of work of managers grew by 57-96%,
- comprehensive approach to the development of managerial skills and competencies brought additional 180 man-days,
- saving of budget staff development amounted to $30,500 through the use of new patented technologies of training managers.

Below we will talk briefly about the use of new patented technologies of training managers.

2.3.2 How our training helps to improve incentives to work?

When companies hire employees, they mostly are interested in their competencies. Companies are not interested in their attitude to work. However, attitude to labor determines the level of intrinsic motivation. In turn, the motivation is a major influence on the desire of the employee to learn

and to quality work. The company's easier to teach a motivated employee than motivate qualified specialist (Yandex.Direkt, Motivatsiya personala, 2012, p. 40). Therefore it is better to hire people who demonstrated a high level of motivation to work, optimism, enthusiasm and desire for growth.

In our case, the employees were highly qualified and had weak internal motivation to work. It is quite true that this situation is not so rare than managers and businessmen want.

During the training we developed the key competences which affect the internal motivation to work. Some methodological conditions for the studies borrowed from work (Okulich-Kazarin, 2013, p. 115).

High unconscious internal incentives to work is formed by the high level of these competencies: focus on results, leadership, and ability to work according to plan, and tasks to the deadline.

In turn, high internal incentives to work ensures high productivity of employees.

3 CONCLUSIONS

We learned advanced methods of intangible incentives of employees. And we found that the methods of intangible incentives are important for 88% of employees. Our experiment has confirmed this observation. Managers and businessmen can reduce the cost of motivation if they will apply the intangible incentives.

Two powerful methods of intangible incentives were suggest for using. They can be useful for companies seeking to raise labor productivity of employees:

1. Competition is strong and fast reception of productivity. It is not important what criteria will compete employees. Competition helps to direct more energy to profit growth. Our experiments showed an increasing employees activity to 20-40%.
2. The second major of intangible incentives is training. Each company has to spend money on training their staff in new technologies. The good news is that the new generation training combines professional growth and growth of internal motivation. Staff can work better, harder and faster on 57-96% after combined training. Business owners and managers will receive a great savings if they will train the staff on the new generation training.

The results of our research are applied in the practice of Russian and other companies. Managers and businessmen will rejoice in the results of work of employees. The success of their Companies will good when they can implement competition and the new generation training.

Our results is very important in the beginning of a new world crisis.

The next step in our research will be the design of a motivational "ladder" for intangible incentives of employees.

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Received for publication: 02.02.2014
Revision received: 07.06.2014
Accepted for publication: 23.06.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Okulich-Kazarin, V., Prichina, O., & Stecenko, I. (2014, 07 15). Some powerful techniques for intangible incentives employees. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 181-191. doi:10.12709/mest.02.02.02.19

*Style – **Chicago** Fifteenth Edition:*

Okulich-Kazarin, Valeriy, Olga Prichina, and Irina Stecenko. 2014. "Some powerful techniques for intangible incentives employees." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 181-191. doi:10.12709/mest.02.02.02.19.

*Style – **GOST** Name Sort:*

Okulich-Kazarin Valeriy, Prichina Olga and Stecenko Irina Some powerful techniques for intangible incentives employees [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 181-191.

*Style – **Harvard** Anglia:*

Okulich-Kazarin, V., Prichina, O. & Stecenko, I., 2014. Some powerful techniques for intangible incentives employees. *MEST Journal,* 15 07, 2(2), pp. 181-191.

Style – **ISO 690** Numerical Reference:

Some powerful techniques for intangible incentives employees. **Okulich-Kazarin, Valeriy, Prichina, Olga and Stecenko, Irina.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 181-191.

MEST Journal
DOI 10.12709/mest.02.02.02.20

PROJECT PORTFOLIO MANAGEMENT IN THEORY AND PRACTICE

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JEL category: **H43, M1, O22**

Abstract

Project portfolio management (PPM) is a relatively new discipline of project management, and it coordinates and controls the projects in organization's project portfolio with aims to maximize projects' results, to balance portfolio risks and to align the projects to the strategic goals of the organization. In an organization, PPM is on a higher level compared to project management, as the final goal of PPM is achievement of the strategic goals through the projects included in the portfolio. However, different organizations have different attitude towards implementation of PPM, so PPM processes vary from one organization to another. This paper gives an overview of the theory of PPM and role of PPM software tools used in managing project portfolios. It further deals with the representation of project portfolio management theory in practice. Two case studies are provided as illustration. The first case study describes the findings regarding the implementation of PPM at Online Computer Library Center (OCLC), a non-for profit-organization with HQ in Dublin, Ohio, USA. The second case study describes implementation of PPM in Johnson Controls, an American factory for production of electronic parts for automobile industry, located in the free economic zone in the vicinity of Skopje.

Keywords: *project portfolio, project portfolio management, PPM support tools, PPM in practice*

1 INTRODUCTION

Projects play an essential role in modern organizations' battle for success, and in achieving and maintaining market competiveness. They are undertaken to complete certain tasks in businesses of all tipes and sizes, and defining projects is very common and useful way to manage operational goals and activities in an organization or organizational unit (Zheng, 2009).

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Projects are defined as temporary endeavours undertaken to create a unique product or service (PMI, 2008). Their temporary character - every project has its beginning and a definite end - and their uniqueness make them distinct from operations, which are ongoing and repetitive (PMI, 2008). More elaborate definition is provided by Turner (1999), who suggests that a project is an endeavour in which human, financial and material resources are organised in a novel way to undertake a unique scope of work, of given specification, which constraints of cost and time, so as to achieve beneficial change defined by quantitative and qualitative objectives (Turner,

1999; Filippov, Mooi, Aalders, & Van der Weg, 2010).

Project management and temporary organizational structures do not serve only to deal with extraordinary tasks, but also to complete regular everyday operations in the organizations (Engwall, 2003). In the last couple of decades, increased use of project management can be witnessed in organizations, especially those of the developed economies. Organizations use project management as a means to achieving their goals, and by managing projects they are able to improve their planning capabilities, control of their activities and the ways of using organizational resources. As project management tools and methods proved to be successful, managers determined that pushing the organizations to the form of projects can improve operations efficiency. According to the international non-for-profit organization Project Management Institute (PMI), which is considered to be authority in the field of project management, today 1/5 of the worlds GDP or 12 trillion American dollars are spent on projects (PMI, 2012).

However, when it comes to multi-project environment, effective management of one individual project is not enough. The fact that organizations have more parallel projects increases the importance of coordinated management in form of Project Portfolio Management (Killen, Hunt, & Kleinschmidt, 2007).

2 PROJECT PORTFOLIO AND ITS MANAGEMENT

2.1 Project portfolio

In portfolio management, all the projects are managed as a group, which is treated as a set of investments (activities) that can balance the properties like risks and return. Besides following the traditional practices for management of single projects, such as defining, estimation, scheduling, monitoring and optimization of the tasks and resources needed for planning and finishing the project, projects are managed on a higher portfolio level (Zheng, 2009). Project portfolio is a group of projects that share and compete for same resources and are carried out under the sponsorship or management of an organization (Mueller, Martinsuo, & Blomquist, 2008; Archer & Ghasemzadeh, 1999). Turner and Mueller (2003) define a portfolio as an organization (temporary or permanent) where projects are managed together to coordinate interfaces, prioritize resources between projects, and thereby reduce uncertainty. Similar to that, Artto, Martinsuo, & Aalto (2001) define project portfolios as collections of projects performed in the same business unit which share strategic goals and resources.

A portfolio exists in the frames of an organization, and it is consisted of a set of current components and planned or future activities, in which portfolios are not temporary like projects or programs (Kristjánsson, 2012). Portfolio components can be quantified, ranged, and prioritized. At any time, a portfolio provides insight into its components which reflect organizational strategic goals, and influence them at the same time. That means that a portfolio represents the collection of all active programs, projects, sub-portfolios and other work of an organization in a certain time (PMI, 2006). One organization can have one or more portfolios. For example, there can be one portfolio at the corporate level, and other portfolios can exist in the different units of an organization.

2.2 Project portfolio management

An organization implements its strategy through portfolio management in business operations. The basic characteristic of portfolio management is to ensure that all the managed projects add value to the organization, that they are chosen and carried out in the frames of the organization's capacity, and that the responsibility is assigned to a certain person to realize the benefits from each of them (Wideman, 2004). The major components of portfolio management include supporting strategic objectives, ensuring value creation, prioritizing projects based on their relative importance, managing the flow of benefits and integrating stakeholders around business objectives (Trentim, 2013b).

Project portfolio management is based on the early theories for portfolio selection in the field of finances, and on the idea that methods similar to the investment decisions optimization methods which proved to be successful in the fields of financial investments can be implemented in project portfolios. The concept of PPM came from two complement, but independent drivers. The first one was the need to make rational investment

decisions that would result in benefit for the organization, and the second was the need to optimize the use of resources in order to ensure that bringing that benefit would be conducted in effective and efficient manner (Young & Conboy, 2013).

Project Portfolio Management (PPM) deals with coordination of projects and programs in the frames of an organization with aims to optimize the results, balance the portfolio risk profile, govern the alignment of projects with the organization's strategy and deliver the projects within the planned budgets (Skenderovic & Burcar Dunovic, 2008). It operates at strategic level and unlike projects and programs, PPM is not of a limited duration - it represents a continuous process which requires regular efforts to secure portfolio balance and consistent alignment with the strategic goals of the organization. Generally, project-portfolio management is a way for companies to analyze and collectively manage in a coordinated way a group of current or proposed projects to reap benefits not available if they were managed individually (LaBrosse, 2010).

The tendency of project portfolio management is to increase the return from projects investments and to contribute to the competitive advantage of an organization by providing a holistic frame for strategic management of project portfolio. It requires that many factors are taken into consideration, and the ability to envision the possible future consequences to support the decision making process in the strategic project portfolio (Killen & Kjaer, 2012).

Table 1. *Consequences of not having project portfolio management (Source: Moustafaev, 2011).*

No PPM implies:	***Short-term effect***	***Long-term effect***
No strategic-fit criteria for project selection;	Projects are not aligned with the company strategy;	Resources are wasted on wrong ventures;
Unwillingness to cancel projects; Many projects end up on the to do list;	Too many projects; Resources thinly spread; Quality declines;	Increased time to market; Commercial failure rates increase;
Weak go/kill decisions	Excessive number of low-value projects; Good projects are starved for resources	Too few stellar projects
Lack of rigorous selection of process; Projects selected on emotion, politics	Bad projects are selected	Commercial and technical failures

It can be concluded that project portfolio management represents an ideal tool for helping decision makers in the formulation of scenarios for investment in the projects which will have greatest impact on the value stream and will position the company most competitively in their markets (Straton, 2011). Portfolio decision makers are able to look at the proposed project in relation with other proposed or ongoing projects and to analyze the impact to the company, using different scenarios. A key artifact to formulation of these scenarios is the business case since it looks at various alternatives for implementing the proposed project or program and how it might play in the current business environment (Straton, 2011).

2.3 PPM goals and phases

In portfolio management literature, and especially in project portfolio management literature, three different goals under the general objective can be found: to maximize organizational benefit from the pursuit of the "optimal" portfolio (Dye, & Pennypacker, 1999; Artto, Martinsuo, & Aalto, 2001; Cooper, Edgett, & Kleinschmidt, 2001). These three main goals of PPM are:

1. Strategic alignment,
2. Portfolio balance, and
3. Portfolio benefit maximization (Arlt, 2010).

Some authors include a fourth goal. For example, Mueller and Blomquist have provided evidence for the relevance of these goals from analyzing PPM

in high-performing companies, and they proposed PPM process maturity as the fourth goal (Blomquist, & Mueller, 2004 In: Arlt, 2010). In his doctoral dissertation, Birgsson talks about four main PPM goals: to maximize the financial value of the portfolio, to ensure project balance, to ensure alignment with strategy and to limit the number of projects in portfolio, as the fourth goal.

Project portfolio management is a continuous process: the projects and programs included start and end, but the portfolio exists until the organization decides to close it (Birgisson, 2012). Levine (2005) recognizes 5 phases of the process of project portfolio management:

1. Portfolio Inventory
2. Portfolio Analysis
3. Portfolio Planning
4. Portfolio Tracking
5. Review and Re-planning

Portfolio Inventory contains information and data about all the proposed, on-going and delayed projects. The information and data are organized for the second phase - Portfolio Analysis, in which projects are analysed using the PPM tools and methods. When the most suitable projects have been selected and initiated, they enter the project planning phase. In the Planning phase, resource, time and cost plans are constructed and integrated with the portfolio planning process where the resource allocation and schedule decisions are made, taking the whole portfolio of projects into account Birginsson, 2012). In the Portfolio Tracking, metrics can be captured through earned value analysis or gates and they are used to evaluate each project. If these metrics do not fulfill specific criteria, a decision regarding the future of the project has to be taken. The Review of the portfolio involves a reverification of the portfolios' critical success factors. There might be a shift in the resource availability, validity of the business case, the corporate strategy or in the business, technology or market condition, which can lead to realignment of the project portfolio and replanning in resource allocation and scheduling (Levine, 2005 In: Birginsson, 2012).

2.4 PPM support tools

In practice, portfolio management is based on information and communication technologies (ICT). In planning and development of an organization's project portfolio, the software tool has the central role and it represents the main information resource. Along with the data about the projects, metrics and different calculations possibilities, many other information resources and knowledge, such as standards, manuals, instructions, and other types of professional literature can be organized in the digital library. Project management (PM) and Project Portfolio Management (PPM) support tools are a common theme in the professional literature from the field. De Reyck, Grushka-Cockayne, Lockett, Calderini, Maura, & Sloper (2005) include the need for PPM software tool in the list of project portfolio management's main components as the 8th component, the first seven being: centralised view of the project portfolio; financial analysis, which unites the methods for calculating the financial value of the included projects; risk analysis or risk evaluation, including the technological risks, cash flow and organizational changes, market and ecological risks; interdependencies, including the narrow waists of the projects that can influence other projects; constraints: at a portfolio level, such as the limited budget; complete analysis at portfolio level; and categorization (for balancing the project mix), selection, and governance.

Specialized project portfolio software provides support for structured selection of projects for the portfolio and allocation to resources based on knowledge and prioritization rather than politics (Levine, 2008). Supporting IT systems may enable visibility, standardization and process improvement, with the overall objective to manage the continuous flow of projects (Filippov, Mooi, Aalders, & Van der Weg, 2010). The system can exchange information with the systems and application used by the components (PMI, 2013).

Benefits of a system of this kind are numerous. A system for project portfolio planning and management ensures that the planned projects are aligned to the business strategy, allows objective evaluation of all the projects and makes sure that the decisions that are brought on a basis of clear arguments, provides possibility for execution of only the projects which give best results, helps to avoid starting projects for which there are not enough resources, gives clear implications for the financial implication and

enables the organization to see which parts of the system have the biggest benefit from the chosen projects (Hunjak, 2006). The scale, timing, and duration of these benefits can be estimated by considering one or more key metrics and the value to the organization of improving those metrics over time. The benefits can be (Symons, 2009):

- Reduction in project failure rate
- Reduction in successful project cost overruns
- Reduction of project throughput times
- Reduction in the number of low-value projects
- Reduction in administrative time (status reporting and facilitation).

On the market, there are a large number of commercial tools for project portfolio management. These tools for support of portfolio management are rapidly improving and they are usually rich in graphics, they offer possibilities for bubble diagrams, project mapping, tornado diagrams, ranking curves etc. All of the PPM tools have some common features, such as database of proposed and current projects that contains project descriptions, cost estimations, schedule of activities, resources needed, expected benefits etc. (Lee Merkhofer Consulting, 2013). Some PPM tools are intended for use in a particular industry or project types, and others are for general use. The tools that have a specific target usually include special functions intended for that industry or type of project, they build their methodology around business processes, client segmentation and success factors that are typical for that branch.

Levine (2008) suggests that in choosing an appropriate PPM support tool, organizations should specifically look for characteristics such as:

- The ability to build various PPM screens and reports to suit organization's particular needs and style without having to resort to programming.
- Context-sensitive end-user help tools that provide direction on how to accomplish specific tasks in the system.
- Support for PPM-specific functions, such as project selection and prioritization - the software should allow the organization to quantify and qualify project aspects in respect to alignment with strategies, cost/benefits, risks, and impact on resources, it should help with the evaluation of balance between such attributes and aid in the pragmatic ranking of candidate projects, and it should provide dashboard style displays depicting project health and highlighting areas needing attention.
- Out-of-the-box content in the form of best-practices methodologies to help the organization get up and running more quickly (pre-configured templates, dashboards and reports mapped to standards such as PMBOK, PRINCE2, Stage-Gate and more).

However, these PPM software tools play only supportive role - the most important role is that of the senior management and its commitment to introduce mature project portfolio management (Filippov, Mooi, Aalders, & Van der Weg, 2010).

3 PROJECT PORTFOLIO MANAGEMENT (PPM) IN THEORY AND PRACTICE

3.1 Implementation of PPM theory into practice

Project portfolio management is a discipline of project management which has increased in popularity in the last decade in both the organizations and the academia. PPM is generally considered to be the best improvement in the field of project management since the development of the project management methods in the 1950s (Birgisson, 2012; Levine, 2005). The increased popularity of project portfolio management during the last fifteen years has led to a firm establishment of PPM theory as a discipline within the research field of Project Management (PMI, 2008). In this period, there has been an increased rate of published articles focusing on project portfolio management.

In literature, project portfolio management (PPM) is examined from many aspects and authors write about and do research on many different subjects. The literature examines the ability of the PPM processes, creates PPM life cycle models, focuses on certain types of projects, such as R&D or IT projects, focuses on computer based tools and systems for portfolio management support, deals with the mathematical models for optimization, etc. (Killen, Hunt, & Kleinschmidt, 2007).

Implementation of project portfolio management in practice is an important issue. There are numerous studies of particular cases, and a number of best practice reports can be found among the professional papers from the field. In practice, due to the changing and risky business environment, modern organizations have to work hard on executing their business strategies successfully and obtaining good results. In project oriented organizations, it is essential to select and fund the right projects, and to track the execution of the projects as unity. In order to be competitive, first of all, an organization has to have well-defined mission and vision, and clear stated strategic goals so it can trace its future path and create plans. The senior management has to make a knowledge map of the organization, and be aware of all the strengths and weaknesses of its human potential. As organizational resources are most commonly limited, good portfolio results depend on carefully selected projects that align with and support the strategic objectives. A portfolio should ideally consist of carefully selected, prioritized, monitored and controlled projects, and well-managed resources, and in order to perform well, portfolio management requires a cultural change and solid communications within an organization (Trentim, 2013b).

The motivation to apply or implement PPM may impact the manner of conducting PPM, so the actual introduction of integrated PPM differs from one organization to another. Organizations may decide to adopt their own approaches to PPM or they can rely on the methodologies designed by professional project management associations and consultancy companies (Filippov, Mooi, Aalders, & Van der Weg, 2010). The complexity of the techniques and processes of PPM can also depend on the organization's size. In any case, the determination and devotion of the senior management and the portfolio managers are in the core of the PPM implementation.

An organization that implements PPM should strive to get the maximum value from the PPM investment. The portfolio should be constantly monitored and controlled, so that signs of problems within the portfolio can be timely noticed. Trentim (2013a) suggests that if more than 30 percent of the projects included in the portfolio are troubled or challenged, there is a probability that the organization has a troubled portfolio. Some of the other signs might be (Trentim, 2013a):

- Lack or no support by senior management;
- Unclear strategic goals;
- Lack of objective selection and prioritization criteria;
- Poor guidelines and structure;
- Lack of standardized project and portfolio management processes;
- Resource allocation issues;
- Poor key performance indicators (KPIs).

3.2 The cases of OCLC and Johnson Controls, Inc

In the Republic of Macedonia, managing organizations' project portfolios is still in its birth, and the very few companies that actually implement a type of mature PPM are bigger foreign companies that started business in the country not so long ago. In order to illustrate the implementation of PPM and its processes in practice, a research has been conducted in two different organizations in 2013 - one for-profit which operates in Macedonia, and one non-for-profit organization from USA (Petrinska Labudovikj, 2013).

3.2.1 Online Computer Library Center, Inc (OCLC)

OCLC - Online Computer Library Center, Inc. is a non-profit membership organization from the field of librarianship and information technologies - it offers computer library services and conducts research in this field. Established in 1967 as Ohio College Library Center, it has its HQ is in Dublin, Ohio, USA, and almost 26.000 members: libraries, museums and archives from 170 countries from all over the world. The number of employees is approximately 1,450 people (OCLC, 2013; Schwab, 2012). The main governance bodies are the board of trustees consisted of 16 members and a global council of librarians, who are elected by regional councils of member libraries. Their vision is translated into a very simple and easily recognizable statement: *The world's libraries. Connected.*

According to the research results, at the time of the survey there were more than 100 active projects throughout the organization, out of which

31 were managed by the Project Management Office in Dublin, OH, USA. The PMO serves as a *Center of Excellence* for many project management related things, such as project management training, mentoring, local and regional project management interest groups, etc. All PMO project managers are project management professionals certified by PMI. OCLC has an ISO 9001 certified quality management system. Apart from the PMO, there are project managers in several divisions throughout OCLC. The typical lifespan of a project in OCLC can be framed in 6 months to 1 year. The interviewed PMO Director considers the organization to be very effective in the use of a project management standards, methodology and process set for the projects in order to continually deliver high performing projects. All processes are well defined, measured for compliance and effectiveness, audited, and continually improved.

Regarding its non-profit character, OCLC does not define profit as an aim per se, and it is not driven by company profit. Value is defined as increased value to the OCLC membership, i.e. reduction of the rate of rise in costs to provide library services to patrons. The strategy is set and projects are selected in accordance with the needs of its members and the value they bring to the global librarianship community. As the member base grows geographically and based on library type, to clearly understand the value a project brings was reported to have become increasingly difficult, and that more effort and different metrics in the process of project selection were needed. However, the influence of the organization's understanding and definition of value in selecting projects has a positive impact on the performance of the portfolio. In selecting a project, OCLC was evaluated as somewhat effective in assessing the likelihood that a project can deliver its stated value to the overall portfolio, as there is a tendency for budget and schedule to be underestimated.

With a reference to the consideration the organization places on the future impact that typical projects will have on limited resources, such as capital or people, the managers broadly assess resource impacts and dependencies, but there is a need to improve this area since the organization experiences a problem with rejecting or not undertaking a new project, or to stop low-value projects once they have started.

In selection of a mix of projects for a portfolio, the organization assesses the value to be delivered alongside other projects by using prioritization methods such as ranking by cost, value or other metrics. OCLC tries to provide objectivity in project selection and the timeframe for reaching a final decision on project portfolio selection relative to what the management considers being necessary in order to make the best decision is considered to be about right. The organization assesses the complementary and conflicting nature of existing projects compared to new projects being added into the portfolio.

OCLC has a pre-project planning policy and that results in better outcomes, as pre-project planning assessments of the cost and schedule of a project in the early stages reduce overruns. The scopes of the projects are rather well defined, so few scope changes are needed. The changes of the scopes are usually slight and with negligible impact on project delivery. The expected medium accuracy of the cost and schedule at the pre-project planning stage is within ±5-20%. Most of the projects are well aligned with the organization's strategy. The organization has well defined governance processes, but application is not rigidly adhered to. OCLC uses standardized collection of project business case data to help make like-for-like comparisons between projects at the portfolio selection stage. It can be concluded from the results that the planning and the governance processes are effective and they contribute to improvement of project delivery.

The project portfolio management tool that the organization uses is rated as above the average and it provides most reporting about project cost, schedule and risk performance necessary. The information provided to the portfolio to enable making good decisions about when or how to intervene in an underperforming project is above the average adequate, and the information helps projects which are problematic in a way to be identified.

The level of control over project performance from the portfolio level is described as very good. The organization recognizes that risks at a portfolio level need to be managed differently from the risk

normally associated with projects, and has somewhat effective risk management. The projects manage their own risks, so the risk management is more connected to project management than portfolio management. OCLC identifies an unsatisfactory project risk to the portfolio by a specific risk rating threshold. The assessment of the optimum mix of projects in a portfolio is updated on a regular basis - at a period of 2-6 months, and projects in the portfolios are periodically monitored to ensure strategy alignment is maintained. As a result of changes to the strategic operating environment, the proportion of the projects in the portfolio changes is between 10% and 25%. Revision of the strategic alignment of projects is effective and is done on a regular periodic basis. In the last 12 months, the number of projects which were withdrawn from the portfolio due to change of the business needs or because they were no longer meeting the criteria is smaller than 10%.

The rate of return and the value of the typical portfolio are measured twice a year, and at project level ROI and the value are measured every month. It is considered that ROI depends on the life cycle of the project and the organization is effective to a certain extend in dealing with difficulty to measure the value delivered at portfolio level. Over a period of one year, the actual expected value delivered by the organization's typical portfolio(s) is below target.

OCLC has been implementing project portfolio management for more than 5 years, and the portfolio is manages as integrated portfolio of projects. The five areas that were identified to need improvements in order to further improve the delivery of the portfolio/s are: standardization of project metrics across portfolios to normalize performance measures; improved risk assessment; enterprise-wide adoption of the portfolio management tool; project prioritization; and resource demand management.

3.2.2 Johnson Controls, Inc. (Macedonia)

Johnson Controls, Inc. is for-profit organization with a main seat in Milwaukee, Wisconsin, USA. It offers services in automotive industry, efficiency of buildings and energy solutions. The company was established in 1885 and today has about 170,000 employees in more than 150 countries in the world (Johnson Controls, 2014). The company's vision is translated into the statement: "*More comfortable, safe, and sustainable world".* Johnson Controls, Inc. owns a factory for production of electrical and electronic parts for vehicles in the Republic of Macedonia. Information included in this case study refers to PPM in the factory located in Macedonia.

According to the information received from the survey, annually the organization has over 50 active projects, with a typical life span of 6 months. The interviewed manager (Department for Continuous Improvement Coordinator) assesses the use of standards, methodology and process set for project management as very effective. The processes are being continuously updated to continually deliver high performing projects. The project management delivery is driven from the senior management team. Johnson Controls, Inc. defines value as portfolio return on investment, customer service level improvement and reduced operational costs. As a clear understanding of what value means is required when assessing the relative merits of potential projects, in the organization the value is precisely defined across all the projects, the value is well communicated and understood, which has a positive influence on the portfolio results.

In the process of project selection, the organization was evaluated as very effective in assessing the likelihood that a project can deliver its stated value to the overall portfolio. The management finds it very important to take into consideration the future impact that typical projects will have on the resources (capital or people and their interdependencies), and the organization fully assess resource impacts and dependencies over time. When selecting a mix of projects for a portfolio, the organization assesses the value to be delivered alongside other projects using prioritization methods such as ranking by cost, value or other metrics. According to the results, the organization objectively selects projects for the organization's portfolio, within the timeframe for reaching a final decision on project portfolio selection relative to what the management believes is necessary to make the best decision. Johnson Controls always assesses resource and investment conflicts for the whole portfolio, and always takes into consideration "do

nothing risks" in the project design. The project value is assessed against the impact of not investing option, and always considers a number of different project options to achieve the best value from a project.

Johnson Controls, Inc. has a pre-project planning policy, which reduces overruns in costs or schedule and results in better outcomes. Project scope is somewhat accurately defined, with few scope changes needed with negligible impact on project delivery. The expected cost and schedule estimation accuracy percentage range is within ±5%. Regarding the alignment of projects with the strategic objectives, the organization always ensure projects meet strategic objectives and then the strategic alignment is revised at every milestone. For evaluation of maturity of projects before they are included in the portfolio, Johnson Controls, Inc. has well established governance processes, applied to to every project. The organization uses standardized collection of project business case data to help make like-for-like comparisons between projects at the portfolio selection stage. The results show that the upfront, pre-planning and governance processes positively affect the final performance of a project, and performance outcomes are greatly enhanced.

The project portfolio reporting systems the organization uses was as excellent software program that provides all reporting necessary projects costs, schedules and risk performances. The information provided by the system is assessed as adequate (not excellent), and able to identify problem projects and enable making good decisions about when or how to intervene in an underperforming project. The organization's level of control over project performance from the portfolio level is described as excellent.

No separate risk management on project and portfolio level is noticed, despite of the fact that professional literature recognizes managing the level of risk in a portfolio as critical to good performance. Management of risks is considered only as project risk management, and it is assessed by the interviewed manager as effective. Project risks to the portfolio are identified by a specific risk rating and costs threshold.

The optimum mix of projects in a portfolio assessment is updated on a regular basis and it happens every 1-2 months. The proportion of projects in the organization's portfolio that changes as a result of changes to the strategic operating environment is less than 10%. In the last 12 months, the percentage of projects in the portfolio that have been withdrawn because of business needs change or because they were no longer meeting the value criteria is between 10 and 25%.

In order to avoid difficulties in the determining the final value, benefit or return on investment from the portfolio for projects extending over long and differing periods of time, the value or the return on investment of a typical portfolio and of a typical project is measured monthly**.** It is considered in the organization that the value returned depends on project lifecycle and that the organization is somewhat effective in dealing with the difficulties in measurement of value delivered at portfolio level when project timescales are overlapping. Over a period of one year, the actual expected value delivered by the organization's typical portfolio(s) deviates in a certain percent and it is usually above target.

Jonson Controls, Inc. in Macedonia has been using the portfolio management process for 1-2 years and the coordinator assesses the portfolio management in the organization to be completely integrated as part of their investment management process. Resource management, control of the results after, and planning for alternatives have been selected as areas that need to be improved in the future.

3.3 A parallel between the two organizations

Both of these two organizations are successful in their fields, and have been on the market for a long time. Project and portfolio management are taken very seriously, and the results show a clear senior management interest and focus on improvement of PPM processes. Managers who took part in the survey expressed existence of positive impact of implementation of PPM on the organizations' success. Objectiveness in project selection being the key element of portfolio success, OCLC and Johnson Controls tend to establish clear selection criteria as to ensure "doing the right projects", and both the organizations regularly review and asses their portfolios. An important aspect is that the

PPM processes are critically evaluated in the organizations, and managers are able to see the weaknesses of their portfolios. It can also be concluded that for-profit and non-for-profit organizations can equally benefit from integrated project portfolio management.

4 CONCLUSIONS

Globalization, rapid development of ICT and some other factors influence the modern business environment a great deal, and as a direct result, the new business climate is characterized by a lot of opportunities. However, those factors make the business environment very competitive, challenging, and filled with different kinds of risks at the same time. Project portfolio management is the solution appropriate for project oriented organizations to choose those projects for their portfolio which best fit their business strategy and to be able to maximize the results of the projects they undertake. The distribution of good practice examples is not even in global frames. There is an obvious lack of information about implementation of integrated project portfolio management in organizations from developing countries. Even in western economies the degree of maturity of PPM processes depends on the organizations that implement PPM. The examples presented in the paper show two organizations that find project portfolio management to be very important for implementation of organizational strategy. Benefits from practicing project portfolio management are numerous and they are equal for all organizations, regardless of the nature of business or orientation regarding profit.

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Received for publication: 30.01.2014
Revision received: 22.05.2014
Accepted for publication: 23.06.2014

How to cite this article?

*Style – **APA** Sixth Edition*
Petrinska-Labudovikj, R. (2014, 07 15). Project portfolio management in theory and practice. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 192-203. doi:10.12709/mest.02.02.02.20

*Style – **Chicago** Fifteenth Edition:*
Petrinska-Labudovikj, Rozita. 2014. "Project portfolio management in theory and practice." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 192-203. doi:10.12709/mest.02.02.02.20.

*Style – **GOST** Name Sort:*
Petrinska-Labudovikj Rozita Project portfolio management in theory and practice [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 192-203.

*Style – **Harvard** Anglia:*
Petrinska-Labudovikj, R., 2014. Project portfolio management in theory and practice. *MEST Journal,* 15 07, 2(2), pp. 192-203.

Style – **ISO 690** Numerical Reference:
Project portfolio management in theory and practice. **Petrinska-Labudovikj, Rozita.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 192-203.

MEST Journal
DOI 10.12709/mest.02.02.02.21

GREEN GROWTH AND POSSIBILITIES OF ITS ENSURING

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JEL category: **F43, O1, O4**

Abstract

The article identifies selected environmental aspects of ensuring green growth, which are being significantly affected by the ongoing globalisation process and subsequent economic growth accompanied by international trade liberalisation and movement of capital and investments in transforming economies. They represent positive and negative effects, whose extent can be significantly affected by structural changes, environmental policy of state and transnational environmental regulation. In Europe 2020 strategy, the European Union specifies green growth factors whose implementation presupposes the adoption of particular measures at the level of the European Union itself as well as within national economies, aiming at environmental burden reduction. It predominantly concerns the solution of economic growth in relation to its material and energetic demands, structural changes execution as well as the adoption of efficient legislation regarding environmental protection. In this relation, production innovations, changes to implemented technologies and substitutions of production inputs are gaining importance. Increased legislative effectiveness presupposes an increase of economic and environmental efficiency of implemented economic tools, aiming at the strengthening of stimulus and fiscal functions of public finance.

Keywwords: *environment, environmental policy, positive and negative effects of the globalisation process, environmental policy tools, transnational regulation*

1 INTRODUCTION

Present time is characterised by a state when the EU, in an effort to eliminate the effects of economic crisis and create conditions for effective economic growth of the EU, has adopted “Europe 2020” strategy for the upcoming decade. The strategy specifies growth factors, ensuring of which presupposes the adoption of particular measures at the EU level as well as by national economies. They are the following growth factors:

- Smart growth, whose implementation presupposes economic development based on:
  - innovations,
  - knowledge (education, training),
  - digitisation of society.
- Green growth, whose implementation presupposes minimisation of the burden on environment by means of:

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  - more extensive usage of renewable energy resources,
  - increasing energy efficiency (reduced energy consumption),
  - decreasing the generation of greenhouse gas emissions.
- Inclusive growth is related to the need of solving the issues of social and territorial cohesion. It is necessary in this relation to draw increased attention to the following issues:
  - employment,
  - knowledge and skills,
  - fight against poverty.

The objectives of green growth ensuring are:

- reduction of greenhouse gas emissions by 20% compared to the level reached in 1990,
- increase of renewable resources share in the final energy consumption by 20%,
- increase of energetic effectiveness by 20%.

Objectives related to the greenhouse gas emissions reduction by 20% of the level recorded in 1990, falling under the emission trading system, are ensured by means of allocating emission quotas by the EU. The fulfilment of emission reduction objectives out of sectors without allocated emission quotas has been promising for Slovakia. Slovakia even has unused room, and can thus increase emissions by 13% in these sectors.

The objective in the sphere of increasing renewable resources share in final energy consumption at 20% seems to be accomplishable for the EU. However, Slovakia only fulfils this objective for 14%. Energy effectiveness increase by 20% will be demanding for Slovakia. The given priorities are mutually closely interrelated and their solution according to Commission´s intentions will enable the EU to achieve a 2% annual GDP growth in 2020, and create 5.6 million new jobs (European Commission, 2010)

A precondition of achieving these objectives is the reflection of these intentions in the economic policies of states and their partial sector policies, including environmental policy. Closer interconnection of the aforementioned policies can cause shifts in the understanding of economic growth as a growth characterised by economic indicators and welfare aimed at green growth, implicitly including economic, social and environmental aspects.

It means that it is necessary in decision-making processes at each management level to reflect, besides other influences, also the bearability of environmental burden and economic consequences arising in case of environmental damage. A crucial phase of the implementation of this process is the identification of factors opening room for deterioration of the quality of environment. These factors include:

- *economic growth and its material and energy demandingness.* Increased economic activity in a country can but does not have to have an impact on the quality of environment. *Positive effects* always arise when economic activity increase reflects in economic growth, which is achieved by means of technologies burdening environment in a smaller extent. *Negative effects* arise when increased burden on environment occurs concurrently with economic growth. Moreover, it is important to consider the fact that economic growth will have a different impact on the quality of environment under the conditions of globalisation, compared to the state of self-sufficiency of a country.
- *structural changes* – can affect economic activities in a country. The intention of environmental policy should be an effort to create room for the transition from productions excessively burdening environment towards less burdening productions and services.
- *legislation related to environment* – direct and indirect tools of environmental policy can be environmentally *efficient* and *inefficient*, thus having positive or negative impact on the quality of environment.

2 ECONOMIC GROWTH AS A GLOBALISATION PROCESS EFFECT AND ITS ENVIRONMENTAL ASPECTS

The views of economists on relationships between economic growth and the quality of environment are not uniform. On the other hand, there are authors like Meadows, Meadows, Randers and Behrens (1972) who express their doubts on the possibilities of long-term economic growth. On the

other hand, there are authors who take the view that economic growth is a tool to reduce the burden on environment. Panayotou (2003) points out in this relation that the relationship between economic growth and the quality of environment does not have to be stable. However, he considers economic growth to be a basic precondition of environmental problems solution not only due to the fact that it generates an increased volume of financial resources which can be used for refinancing environmental measures, but also due to the fact that technical development enables the substitution of environmentally unsuitable technologies by cleaner ones.

In relation to examining relationships between economic growth and the quality of environment, Kuznets (1966) created a curve showing the dependence between the level of environmental pollution and the amount of income per citizen. The curve has a shape of reversed U. The breakpoint of Kuznets environmental curve according to Grossman and Krueger (1994) comes at the amount of income USD 8,000 per citizen of a country. However, this curve line has not been confirmed for all polluting substances. It concerns e.g. greenhouse gas production. The curve line implies that significant deterioration of the quality of environment occurs upon lower levels of economic growth, which, according to him, is a consequence of implementing outdated technologies, excessive exploitation of natural resources as well as inefficient agriculture and forestry. It is assumed at a higher level of economic growth that structural changes occur in economics; industries based on information and services are established; and environmentally suitable technologies are implemented. The amount of income of population was considered to be a significant factor having an impact on this process.

Examining the relationship between pollution and the amount of income per citizen in a long-term horizon, Harbaugh, Levinson and Wilson (2000) extended the original shape of Kuznets curve from the shape of reversed U to the shape of N. The N curve shape reflects the state when the level of pollution after income threshold value achievement decreases at first, however later, following the increase of incomes of the population, pollution repeatedly increases. In a longer time horizon, this curve line confirms the development in economically developed countries. It may be assumed that ongoing globalisation processes in other developing countries will copy this development.

It is necessary to point out in this relation that pollution reduction, which Kuznets justifies by increased income was, besides other factors, caused by the globalisation process itself, which opened room for restructuring the economics of the *developed economies* in the direction of the transition from environmentally demanding productions to less demanding ones and services. We would like to emphasise that this environmental burden reduction is not only a solution of global environmental problems, but also of local ones. Moreover, it is necessary to remember the fact that the restructuring process is always facilitated by stricter environmental legislation of a state, accompanied by increasing the environmental awareness of the population.

However, strict national environmental legislation can have a negative impact on the economy of a country in relation to the fact that investors, helping economic growth, can move to other countries, particularly those in which national governments "loosen" their environmental legislations in an effort to attract investors. The globalisation process thus theoretically opens room for the transfer of pollution from one country to another, while the amount of polluting substances does not change in the global system of environment. On the contrary, it can increase as a result of more significant economic growth in a host country of an investor, and subsequent income growth of its population.

Inflow of foreign investors is positively evaluated in relation to economic growth and employment in the given host country. Impact on environment is however necessary to evaluate carefully. If a host country "loosens" environmental policy tools, it cannot be a right decision. Under the precondition that environmental legislation is valid for all, i.e. no exceptions are allowed from environmental policy tools implementation, the inflow of direct foreign investments in a country can be evaluated positively, particularly when it concerns high technology enabling the given country to carry out structural changes. However, a condition is *correctly valued natural resources used* by the

country, and reflection of negative externalities arising in relation to a country´s production in manufacturing costs by means of the implementation of financial and economic tools (environmental taxes and charges). Only after these preconditions have been fulfilled, we can discuss a positive impact of direct foreign investments on green growth and maximisation of social welfare in the country. If it is not the case, the globalisation process carried out by means of direct foreign investments opens room for the transfer of pollution from one country to another.

3 STRUCTURAL CHANGES AS A TOOL OF INCREASING THE QUALITY OF ENVIRONMENT

The globalisation process by means of *direct foreign investments* opens room for a country to *carry out structural changes*. However, economic activities should focus on industries in which the country has a comparative advantage. Efforts of a host country should include the transition from heavy and processing industries towards services. In case of reductions in exigent industries regarding environmental resources, or if their growth develops slower than the GDP growth, we can speak about the arising of "*free ecological effects*".

The main spheres in which structural changes implementation enables an increase of ecological effects include:

- *innovation of production* – i.e. a decrease of the burden on environment caused by a product itself. Changes to production should result in the production of environmentally suitable products.
- *change of technological procedure* – during which less polluting substances are emitted or material consumption and related energy demand decrease in relation to their production.
- *substitution of production inputs* – environmentally unsuitable production inputs are substituted by environmentally more suitable inputs.

Positive effects of structural changes can be to a certain extent *eliminated* by means of increasing production volumes, however only under the condition that the increased production volumes increase the pressure on environment. It does not always have to be so upon high technology implementation.

The implementation of *structural changes* in a country is also supported by *trade liberalisation*, which facilitates the purchase and subsequent usage of environmentally more suitable technologies, and it opens markets for trading with countries whose consumers prefer so called *green products*.

There have been several debates on the impact of trade liberalisation on the quality of environment, dealing with its positive and negative effects on environment.

Negative effects of trade liberalisation on environment are dealt with by theories "Race to Bottom" and "Poluttion Heaven" (Fortanier & Maher, 2001). Under "Race to Bottom" theory, countries participating in international trade implement lower environmental standards in the fear of decreased competitiveness. This fear results from the fact that the implementation of strict environmental legislation will be a burden for business sector, which will result in increased manufacturing costs compared to competition obliged to observe strict environmental legislation. "Poluttion Heaven" theory points out the existence of comparative advantages which can have different negative effects on environment. Differences in the effects are conditioned by: differences in capital and labour possibilities of a country, different availability of resources, and different levels of environmental regulation.

Positive effects of trade liberalisation under "Porter Hypothesis" theory (Porter, 1990) result from the fact that multinational companies operating on a competing market always use environmentally more efficient technologies and procedures compared to the technologies and procedures implemented in a host country so far. "Gains from Trade" hypothesis (Fortanier & Maher, 2001) results from the argument that due to trade liberalisation, the production of goods and services on the market of each state increases compared to the state presupposing the self-sufficiency of each country. Trade liberalisation is thus becoming a tool supporting the increase of environmental standards and subsequent enhancement of the quality of environment.

Broader implementation of environmental technologies presupposes the stimulation of business sector by state focused on the participation, in a certain extent, in the effects resulting from decreased burden on environment. It is important for environmental policy in this relation to have the tools enabling a compensation of increased cost demand in the business sector (tax reliefs, depreciation, grants upon the purchase of environmentally suitable technologies etc.).

4 GREEN GROWTH AND ENVIRONMENTAL LEGISLATION

The achievement of behavioural changes in production and consumption decisions in the business sphere and population presupposes, besides the fulfilment of other attributes, the implementation of a broad range of environmental policy tools, which represent an essential part of each national environmental policy.

It is possible in the ongoing globalisation process to structure the environmental policy tools from various aspects. The simplest structuring is the way the given tools affect the mechanism of functioning of economics. Following the adoption of this approach, it is then possible to distinguish *direct* and *indirect* tools. Other structuring can include the division into *normative financial and economic* and *free* tools.

The implementation of *direct environmental policy tools* in management practice can have various forms: orders, prohibitions, restrictions of allowed pollution amounts, or even the prohibition of certain productions. However, the most frequent form is the approach based on environmental standards, while they can be standards of the quality of a selected environmental element, emission standards, technological standards as well as product standards.

A positive feature of standard-based environmental quality regulation is the fact that their implementation can ensure the fulfilment of stipulated quality of environment quite fast. *A negative feature* of their implementation is the fact that standards are static and *little stimulating*. It is thus common that technical progress implementation is reflected in them with time delays. Further disadvantage of standards is that their implementation *does not result* in minimisation of the economic costs of an emission unit decrease.

Unlike direct tools, *indirect environmental policy tools* do not prescribe environmental protection, but they stimulate polluters to adopt measures reducing burden on environment. Indirect tools include payments in the form of *environmental taxes, charges, contributions, compensations, emission permissions and deposit-refund systems, emissions trading* as well as voluntary agreements implementation.

Indirect environmental policy tools are market-conform in their economic nature.

4.1 Environmental Taxes as an Environmental Policy Tool

A reason for spreading the toolkit of environmental protection towards the market was knowledge on the *theory of welfare economics*, under which labour, soil and capital are *effectively allocated* when *prices* of commodities *equal their marginal social costs*. According to this theory, those are prices regulating the allocation of resources in the direction of their most effective usage. One of the conditions of effective resources allocation is the existence of equality between private and social costs.

English economist A. C. Pigou (1932) developed the theory of welfare economics. He claimed that ineffectiveness in resources allocation originates in the *existence of negative externalities*, whose arising is based on the fact that environment is a public good used by economic entities regardless of the impact of their decisions on further entities, including the impact on future generations.

He comprehended negative externalities as costs imposed by one economic entity on another economic entity. He saw the elimination of ineffectiveness in the implementation of a tax on externalities, also called Pigouvian emission tax. A. C. Pigou presupposed that if emission tax equalled external costs, private costs of producers would increase at the level of social costs. Costs of the production would thus reflect social manufacturing costs and would become tools of *effective resources allocation.*

However, it is necessary to point out that in his reflections on emission tax, Pigou *did not consider*

the existence of deformations in economics, which results in the fact that private costs differ from social costs. Such deformations are caused by e.g. economies of scale, monopoly power of the market, as well as the implementation of classic, standardly implemented taxes.

Economic science considers taxes to be a tool causing welfare losses, and in financial science, these losses are called “undue financial burden”. Taxes in their economic nature disrupt conditions of effectiveness. It is therefore impossible to expect, like Pigou presupposed, that emission tax implementation will result in effective resources allocation. However, according to the theory of welfare economics, it is possible to generate a certain welfare increase by their usage due to the fact that the deformation effects of environmental taxes are lower than the deformation effects of standardly implemented taxes. Environmental taxes implementation thus applies a less distorting taxation system. The EU also supports a more extensive implementation of environmental taxes. The process of environmental taxes implementation is supported by the EU, which recommended the member states a more extensive implementation of economic tools, also including environmental taxes already in the fifth environmental action plan (1992).

There is a great amount of literature on the potential of environmental taxes to contribute to an increased efficiency of environmental policy. Several authors agree on the fact that if environmental taxes are properly designed and implemented, they can contribute positively to the minimisation of costs of environmental burden reduction, have stimulating effects in carrying out innovation processes, increase employment and, which is most important, contribute to green growth.

One of obstacles in environmental taxes implementation in taxation systems is fear in the business sector from competitiveness loss, as environmental taxes are additional tax payments generating costs of companies. The simplified consideration of competitiveness loss results from the assumption that the whole environmental tax amount will be reflected in the manufacturing costs of companies with subsequent increase of product prices, consumption reduction, production volume reduction and unemployment growth.

However, it is necessary to consider the fact that the impact of environmental tax on competitiveness is affected by several factors, including:

- ***First***: *the possibility to transfer increased costs on consumers, employees or suppliers of production inputs.*
- **Second:** *market structure, the number of market participants, the extent of regulation in economics* (e.g. prices regulated by state).
- **Third:** *the impact of international competition.* The smaller and more open economics is the more restricted are possibilities of business entities to reflect increased costs in the prices of consumers and suppliers of production inputs.
- **Further factors**, affecting the impact of implemented tools on companies include: geographical distribution of a market, homogeneity or non-homogeneity of a product, the possibility of production inputs substitution, the ability to implement and finance new environmentally suitable technologies.

4.2 Direct Tools and Green Growth

The practice of environmental protection tools implementation confirms that environmental protection by means of environmental tax as an exclusive environmental policy tool is very rare. Environmental taxes are normally implemented in combination with direct environmental policy tools.

An example of using the combination of environmental taxes and direct environmental policy tools can mainly be found in Northern countries.

It is necessary to keep in mind upon the implementation of environmental tax and direct tools that the *direct regulation* of environmental protection presupposes that polluters are obliged to fulfil immediately the stipulated environmental standards, while environmental taxes stimulate polluters to reduce emissions where costs related to their reduction are lower than the environmental tax amount a polluter would be obliged to pay. It is necessary to emphasise in this relation that the stimulating impulse of environmental tax is necessary to evaluate over time in order not to

prevent the flexibility of polluters in looking for cost-effective possibilities of reducing the burden on environment.

4.3 Environmental Tax and Tradable Permissions

Trading with emission permissions is a modified form of direct environmental protection tools. The idea characterising the nature of trading with emission rights is an effort to create markets for environmental resources.

The main reason of the situation when such markets are not created spontaneously is generally considered absence of property rights on environmental resources.

Therefore, efforts to solve the problem reflected in the creation of property rights on emissions. The creation of such rights proceeds as follows: the regulation centre responsible for the quality of environment stipulates the amount of emissions of harmful substances which can be released in the system of a selected environment element for a certain period without exceeding the respective imission standard. Subsequently, maximum allowed emission volume is divided among individual polluters.

Polluter thus gets the emission right. In case emissions in their company have been reduced under the stipulated level, they can emit their right, sell "the remaining emissions", or if they emit more emissions than their allocated emission right, they have to buy the right to emit them.

The functioning of the market with emission rights is affected by several factors, including:

- the existence or non-existence of *environmental technologies* enabling emission reduction,
- active market with *several buyers and sellers* enabling transparent generation of emission prices,
- the ability of offices responsible for pollution control to monitor emissions and carry out their control,
- market rules which need to be simple and transparent and have to result in low transaction costs.

The aforementioned factors have a significant impact on economic effectiveness as well as environmental efficiency of trading with emission permissions. Under the precondition that factors affecting the market functioning have been fulfilled, trading permissions usage enables:

- to balance costs of reducing the burden on environment,
- to stimulate technological changes oriented on the burden reduction,
- to provide a high level of environmental safety by means of stipulating a maximum limit of environmental pollution,
- flexibility in generating distribution and redistribution effects.

Arguments justifying the parallel implementation of environmental tax and tradable permissions include the fact that their interaction creates a tool for reducing uncertainty upon emission reduction at minimum costs. Both tools increase the flexibility of environmental policy toolkit, however with different environmental efficiency and economic effects distribution. The enforcement of environmental taxes in combination with the tradable permissions system has spread in relation to free allocation of emission permissions.

4.4 Environmental Taxes and Voluntary Tools

Over the last years, so called soft law, including so called *voluntary tools of environmental behaviour,* has been implemented in environmental protection besides economic tools.

We can say that it is a *reflexive regulation* related to the implementation of "self-reflexive" approaches of companies considering the impact of their activities on environment. Such companies – polluters are not an object of regulation by institutions responsible for the quality of environment, but they have become a part of the regulation process on the grounds of their own decision. Such tools include EMS and EMAS environmental management systems as well as labelling of environmentally suitable products and voluntary agreements.

EMS system according to ISO 14001 is a globally accepted environmental management standard. The system of managing companies and audit from the viewpoint of environmental protection – EMAS was created from the initiative of the

European Union and is most frequently implemented within the European area. EMAS system represents a higher level of environmental management than ISO 14001 standard. However, the system follows the standard and arises from it. Following the implementation of *voluntary agreements,* some industries can be exempted from environmental tax payment, or they pay lower taxes compared to other sectors under the condition that they have voluntarily decided to carry out measures to reduce the burden on environment.

Advantages resulting from voluntary agreements implementation are important for business sector due to the fact that the "agreement" creates room for a greater flexibility upon the fulfilment of environmental objectives compared to the implementation of other environmental policy tools. Public sector gives up the income from environmental payments collection and subsequent possibility of their usage for the benefit of environmental protection upon voluntary agreements implementation.

Views on the suitability of implementing a toolkit which would efficiently affect the burden reduction and at the same time eliminate the possibility of environmental risks creation vary not only in theory but also in the management sphere itself. In spite of exceptions, business sphere opposes the process of making the implemented environmental protection toolkit *stricter*. Governments themselves are concerned in relation to a stricter toolkit, particularly when they would like to be pioneers in the greening of economy. A certain solution is a *common procedure* of all countries upon the implementation of stricter environmental legislation.

Without the implementation of harmonised legislation on environmental protection, the globalisation process places less developed and developing countries in an "environmental trap" and at the same it, it creates room for the *transfer of pollution* from developed to less developed countries. The creation of mechanisms of environmental protection transnationally, which would be valid for all polluters in each country, can be a significant shift in solving this issue (Kubicova, 2009). Cooperation of sovereign states in the sphere of taxes and international taxation is a new phase, which has significantly shifted the solution of environmental problems, too. Individual countries, as the addressees of *transnational environmental regulation* implementation, should be obliged to bear responsibility for environmental protection at the given territory and for preventing the arising of environmental risks. It is always necessary to evaluate positively the initiative of countries upon adopting their own national legislations tightening the transnational regulation. The first approaches towards the creation of transnational mechanisms focused on the prevention of environmental risks occurrence can be found in interstate agreements, which include Montreal protocol, Kyoto protocol, tax on energy adopted in the EU, etc.

Political willingness of governments to cooperate upon environmental protection presupposes taking responsibility for further development of the wold and for the right for clean environment for all. International agreements upon solving global problems have to create a basis for effective cooperation in the sphere of environment.

5 CONCLUSION

The examination of factors affecting green growth is very complex due to the fact that the globalisation process generates positive as well as negative effects in relation to environment.

An increase of positive effects of the globalisation process in relation to ensuring green growth presupposes:

- the ensuring of closer interrelatedness of economic, financial and environmental policies so that effects having negative environmental impact are wilfully prevented,
- the implementation of a more efficient stimulating system of environmental policy tools, by means of which it would be possible to approach the internalisation of negative externalities more thoroughly,
- the enhancement of environmental policy efficiency by means of implementing a broad range of voluntary tools,
- the reduction of natural resources devastation presupposes a purposeful distribution of financial resources for the benefit of population living at the edge of society.

Reflection of the aforementioned measure in environmental policy in an effort to mitigate

negative effects of the globalisation process on environment presupposes the existence of efficient environmental policy tools aimed at increasing their stimulating function and environmental efficiency.

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Received for publication: 26.03.2014
Revision received: 12.05.2014
Accepted for publication: 23.06.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Romančikova, E. (2014, 07 15). Green growth and possibilities of its ensuring. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 204-213. doi:10.12709/mest.02.02.02.21

*Style – **Chicago** Fifteenth Edition:*

Romančikova, Eva. 2014. "Green growth and possibilities of its ensuring." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 204-213. doi:10.12709/mest.02.02.02.21.

*Style – **GOST** Name Sort:*

Romančikova Eva Green growth and possibilities of its ensuring [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 204-213.

*Style – **Harvard** Anglia:*

Romančikova, E., 2014. Green growth and possibilities of its ensuring. *MEST Journal,* 15 07, 2(2), pp. 204-213.

Style – **ISO 690** Numerical Reference:

Green growth and possibilities of its ensuring. **Romančikova, Eva.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 204-213.

MEST Journal
DOI 10.12709/mest.02.02.02.22

SOCIOECONOMIC AND ORGANIZATIONAL CONTEXT OF MANAGEMENT

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JEL category: **D2, D23, Z1**

Abstract

This paper deals with the development of management that takes place in many areas and covers a wide range of activities, aiming at improving communicational and representational skills. It also includes the development of specific skills such as management of information in the office, assessment of performance, financial management, governance in different cultures and alignment capabilities (training) management in accordance with changes in strategies and organizational structure. The management is characterized by a variety of approaches, methods, interpretations and ideas related to human and organizational development.

Contemporary management is in a stage of transition specialists to control the deformation between the managerial hierarchies, and also the trust that is necessary if people need to take initiative. During this transition, manager's development is faced to many dilemmas and severity of consequences. Managers may fear that their specialization might be followed by retrenchment of working positions. This development of their knowledge and skills will help them improve themselves and prepare them for a career change.

The most powerful sources for management development are the global technology and personal knowledge and skills development.

Keywords: management, management development, manager, organization of work, creativity

1 INTRODUCTION

The development of management in many areas is a wide range of activities: from self-development to communication and representation skills. It also includes the development of specific skills such as managing information in the office, performance evaluation, financial management, managing in different cultures and alignment capabilities (training) management in accordance with the changes in strategy and structure. This area is characterized by a variety of approaches, methods, interpretations and ideas related to human and organizational development. However, “a large variety has its drawback. Many of us fall into a behavior like a bee that gathers honey from each droplet on flower ... balance must be found between the need to investigate ... and the need to work carefully while on a well thought out position” (Weissman, 1992).

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Global flows of money and information have a direct impact on the development of management, which was originally formed during periods of relative stability, when it was likely to ignore volatility. Management is in transition from a command and control structures, the corresponding relationship stability, distributed decision-making structures needed in the rapidly changing conditions. From managers are now required new approaches to decision making under uncertainty, and they also have to put much more effort to create an atmosphere where people can cope with the instability not only in decision making but also in the course of their employment. The best method of organizing work in Management Development - a project of the individuals included in the project boundary of the organization.

As it is known, the word “management” is used in three ways:

- Management science,
- Process management, leadership
- Category of people who are managing (managers).

We consider the problem of management as vocational qualification group managers, executives.

1990s - Important time trials for both managers and for management development. Global flows of capital and information affecting any organization, regardless of its scale or location. Managed or planned, the economic system is collapsing worldwide growth and relative stability is no longer considered as large organizations can no longer control the economic development. Instead, these organizations are now “more modest perception of their authority,” and they “share a common destiny” in the face of dynamic complexity that characterizes the global environment (Pareto, 1906). The impact of this complexity on the structure of organizations on what is expected of people who work in them, and understanding the power and authority clearly focused on specific managers who sit at my desk, thinking about how to set priorities. In this situation, managers and those responsible for supporting their development, on one hand, experience confusion, on the other hand, are faced with new opportunities.

Confusion easily happens when managers feel that they are called up to act one way, and then they are treated differently. Although theorists have noted “the rapid change in the development of management style - go from style - based control and aggression ... to a style based on mean and friendly relations”, there is evidence that some companies still have a long way: CFO of a large organization for the production of media assets so has recommended his own company: “This company depends on the creativity of the people who make program, and it treats them both phony!” (Shein, 1985)

2 WHERE DOES THE DEVELOPMENT OF MANAGEMENT COME FROM?

In the past, development management provided systematic training based on a detailed job description conducted in accordance with the standard schedule and was learning new skills and abilities. A manager had to answer to every problem and be sent on courses. This approach is faced with a “transfer learning problems in practice” and the focus is shifted to individual learning and the process of learning.

However, socio-economic and institutional context within which management evolved remained relatively unchanged. Providing income to shareholders remains the primary goal of most companies, dominated by commanding and controlling hierarchy, jobs are very specialized, planning is separated from its actual implementation and management reserved set of methods, with which you can perform a certain task. A management task was to make a rational choice from a set of options and then develop a new logical explanation for the behavior, based on the analysis of control problems faced currently. The approach, known as Taylorism watched “initiative and incentive” as a barrier to the effective mass production and defended the “substitute science for the individual judgment of the employee” (Skone, 1995). Most decisions are taken in situations where you can learn all the facts, allowing managers to analyze, predict and use their knowledge and experience to guide data collection, findings, and control deviations from the steady flow of events. In this environment, people have been properly instructed and

supervised, and prevented them communicate with each other.

The economic system that came into the arena later, faced with the need to be determined before the competition and rapidly accumulate most of the capital. This need gave birth to a motley collection of specimens' relationships with financial institutions, customers and employees. Entering the market at a time when technology was already quite complex, companies are faced with higher capital (fixed capital costs per employee). Many, therefore, chose broad skills rather than narrowly focused to encourage people to express their views in the light of the economic usefulness of exchanging information directly into the workplace and change the specialized production time for the length of time during which you can share information.

Management, especially in mature economies is under control of professionals that come between the government hierarchies, the trust that is necessary if people need to show the initiative. During this transition management development is faced with the same dilemmas and severity of consequences and specific managers. Managers may well fear that after their development followed by retrenchment, and this development will help to improve themselves and prepare for a career change.

In a controlled economy, government is the primary mechanism for control within the organization. But in order to remain viable in the turbulent surrounding atmosphere, where no group controls the fate of the business as a whole, the organization should be much more responsive to price and thus to cost. To remain viable in the global economy, where the emphasis is on information management instability, innovation and teamwork, organizations need to better know their human assets and mechanisms for trust management including them in the process. However, the mechanism of power embodied in the command and control hierarchy is very strong, and market considerations should dictate strict financial control, significant downsizing is often the consequence.

Management development in the mid-1990s. Located at the stage of transition from command and control and to save money and culture. But while the command and control style does not conflict with each other and can generate in terms of stability in the workforce loyalty and a sense of security and reliability, reduce costs and complicated culture fit together. This conflict can have a major impact on the management and development.

Companies have great expectations from their managers. According to the opinion of one of the managing directors, the manager must be impresario, "can engender enthusiasm and focus in one direction desire of many individuals with different talents. He listens, he creates a vision and structure, and he is inspiring. "According to another director, a manager should be a sculptor, "forming a manager who can make good decisions, and not to be smoothly polished piece of yesterday" (Martin & Midgley, 1996). Other ideas about the role of manager: manager must "leave everything and do not rush the progress of events" or be the conductor of an orchestra, a gardener, a guide, a volunteer instructor or advisor. According to J. Pariha, "the role of management is to create an atmosphere within the organization, the culture and the context in which corporate enrichment and personal achievements undertaken in conjunction with each other and are in resonance with the progressive development of the creative process and integrated global community" (Meskon, 1992).

Since managers are expected to be effective manage profitable divisions, skillfully control costs to compete with other departments, subjected to inspection and audit themselves, and be rewarded accordingly for performing certain work - all at the same time.

Most of the structures and systems of support market mechanisms by government command and control hierarchy, and it's a powerful combination. At the same time, awareness of the presence of people in the innovative capacity needed to implement market opportunities and use their judgment in dealing with uncertainty and perceptions of trust as a "grease" social tie outside the role of content manager. He gets under their means much attention that the current management development given culture, people, communication, interpersonal skills and team building skills. But nevertheless the structures are managed on the basis of power, despite the smaller number of hierarchical levels and growing

economic role and power of global networks and alliances. The contradictions inherent to these expectations on the role of manager - it is one and the same time be authoritarian and egalitarian both - lead to significant problems. They are briefly summarized by T. Peters: "Approximately 97% of your people - creative, strong, loyal, caring and generous, with the exception of eight hours, when they will do for you. We need to ask yourself a serious question: what kind of a bottomless abyss as managers we created that selected these talents and turned them into disabled people?" (Morhunov, 2001)

An effective manager's job includes training that gives the ability to deal with complexity, diversity and uncertainty. Success depends on trust: trust managers to their own inner resources and intuition and take responsibility for creating a climate in which their subordinates can do the same. “For over thirty years the world of management, whose main task was to create a business treats intuition as a dirty word ... but now that companies are looking for the ways to create big business and go after more than a decade of excessive rationality and disaster strategic planning, intuition returns to us. The problem lies in how to combine it with the need for accurate and deep understanding of markets, technologies, strategic and competitive behavior, which managers need in times of global competition, complexity, instability and rapid change” (Mylner, 2006). When details of the actual situation recognizable, more likely in a stable economic and market conditions, managers can use their knowledge and experience in order to analyze the situation and make the right decisions. However, as an important part of the work associated with uncertainty, managers are forced to go beyond making a decision based on full information. Management problem goes beyond logic, managers must rely on their judgments and choices, and now for this choice, not the information should be responsible (Burng& Stalker, 1961).

As a result, the new value, insight, intuition and implicit knowledge are increasingly becoming common decision-making by people due to the interaction between what is clearly written and the fact that defies precise formulation and the process of thinking that led to the decisions may not always be clearly stated. This can lead to problems for those managers who have been trained and competent analysis of rationalism, monitoring and controlling those who work for them, so they do the same as they are. Managers are faced on one side with the new requirement to use intuition, on the other - a concern that important decisions - their own as well as their managers and subordinates - based on something elusive and “unscientific”. Intuition, which leads to a highly valued opinions voiced, but it also depends on the elusive and very delicate balance between what and how people feel that they can understand and do, and those difficult tasks they face. Managers are overly occupied, or insufficiently immersed in their work, are much more likely not to trust their instincts: they probably will feel that their support is fragile and unreliable as a basis against destruction, as they concern increases, competence, in accordance with decreases.

Program for Management Development in the South African company Anglo American Corporation has been specially designed to minimize excessive stress and unreasonable doubt. The program includes the development of service centers that use a procedure known as “Evaluation of career path” to assess the current capacity of individuals to make decisions in the face of insurmountable uncertainty. Evaluation provides the basis for development for individual programs that coordinate with increasing responsibilities superstitious growth of this ability in the future. One of the primary goals of this program is to determine the ability of managers of Negro origin and providing them with appropriate opportunities to move forward. Until recently, managers of Negro origin were virtually in no demand, and the purpose of this program was to ensure that in the future they would not be either too overwhelmed or insufficiently used. To achieve this, it was necessary to use a procedure that is quite free from the influence of cultural warnings. It is because this balance is so fragile, it requires from people to use their intuition which means asking more than they can and are willing to give. Physical conditions may be important, but cultural aspects - how created expectations evaluated learning what behavior is encouraged or discouraged – are probably the most important.

In command and control hierarchy responsible managers are simply controlled. In the transition

to new models of management of waiting as support strict financial control, which can make them feel absolutely ruthless and create a climate in which those who work for them, “educate”, “encourage” and “cared for”.

In terms of climate in which managers are expected to use their judgment to trust intuition and encourage others to do the same, the development of management should include concepts such as learning how to learn, to be able to listen, to be part of a team, to influence others, communicate and understand the presence of the individual’s ability to grow. As managers perform new and broader challenges of development should occur at a pace that is not too pushed, does not lead to anxiety and loss of confidence. Otherwise, the effect will be negative.

As a good practice, these concepts are woven not only with the overall development of the organization as it also modifies itself to meet the challenges of their environment, but also with an understanding of why these changes in culture and behavior are necessary. When these relationships are clear, difficult relationship between tight financial controls, job cuts and concern for people can be understood better. Need of creative people who will act on its own initiative, serving customers or creating products, because the survival of the organization depends on its ability to be flexible and adaptive in a highly competitive environment, and the behavior of individuals is a source of flexibility. Organizations need people who will work together as a team, so that the efficiency in the rapidly changing environment depends more on people than on their accumulated money, information and insight. In command and control hierarchy where considerable force is position, not all information is available, and that value that it might have lost. If there is a constant high level of human capital, represented in the person of each employee, organizations need to maximize the use of their investment.

The era of lifetime employment is over and not guaranteed next working heavy burden on managers, causing concern and their fate and the fate of those who work for them. It was assumed that there was a return to the relationship “master – servant” during early industrialization, when workers have minimal rights. For many workers this is true. In the countries where the creation of conditions of well-being are considered to be too expensive for the government and organizations, entrepreneurs can make contracts so that they do not have to contribute to the national security. Particularly women and young people can be hired on a part time basis and without any rights. In the states that are fighting for the creation of the economy may be varying degrees of legal protection against such tyranny, by establishing employment conditions for recognition of trade unions.

Management in terms of abundance of different types of contracts - a new experience for managers and that what they need for their development. There are technical and legal problems that they need to deal with, and there are expectations that the relationship represented in the contract, will cost in accordance with the "culture of caring and respect for mutual interests " (Anon, 1988). This kind of expectation can be a real moral dilemma that managers face with. They are encouraged to treat people not as a production unit, but as individuals with strong potential. There is a lot of talk on “management paradox” paradox that encourages managers to plan the culture of education and encouragement in a situation where, at any time a dismissal can occur. Managers need help to understand the nature of contracts as from a technical and cultural point of view. There is also a need to ensure transparency in areas of the organization.

To develop self-knowledge, best practice has to be offered. That means using a variety of psychological tools to help people reflect on themselves and on how they perceive others. These tools may include Type Indicator Myers-Briggs people (Myers Briggs Type Indicator), 16-factor personality questionnaire R. Cattell (16 PF - Personality Factor), personality assessments, critical thinking tests and communication of equal position and the subordinates. For evaluation of individuals these instruments without feedback may not be the best method, but there are organizations that do not distinguish between assessment and development.

Successful practice places the development of management in the business, facilitates strategic development and definition of long-term direction. The survey of CEOs worldwide in 1990 showed

their priorities in the development of management: strategic competence (mentioned 71% of all respondents), adaptability to new situations (67%), sensitivity to cultural differences (60%), and ability to work in international teams (58%), relationship skills (40%), and a high level of focus on the problem (19%) (Granstrand, 2000) (Hinterhuber, 1991) (Congress, 1995).

Widely used approach "to base – competence" combines the development of management and organizational development, combining a thorough analysis of the role of a full assessment of the competence of the individual. As with psychological tools, this approach can enhance the individual self, it becomes increasingly important to the extent that people in and out of the various organizations in different periods of their working lives and which also may constantly seek a balance between work and other aspects of their lives.

One company president described the role of experience in the decision as follows: "Good decisions depend on the expertise and experience depends on bad decisions" (Koch, 1998) (Koch, 1999). What matters is not what people have done or what they have been working in a certain area, but what they have gained experience. Understanding how the interaction between knowledge, experience and solutions change in the transition from stability to turbulence may convince managers that they have the knowledge, experience and decision in a stable environment. In case they do not know something, it is only because of the lack of education, experience or consideration: "Although knowledge - one of the essential instruments of labor, it is - not the work ... the mere knowledge does not bring you to the end ... The work problems you encounter cannot be completely correct answer. You should use the knowledge and solutions in combination" (Mylner, 2006). Considering knowledge as a tool, people are exempt from guilt because they do not know something and it helps them not only to the current uncertainty, but that uncertainty is increasing in many situations where decisions need to be taken.

Knowledge is no longer a static model, we transfer from one situation to another, but a way to adapt and re- coordinate the familiar model of vision, discussion and action in new situations. In a labor environment's ability to monitor the state of affairs in the world, create both implicitly and explicitly formulated knowledge and bind them together in a "spiral process" provides a crucial corporate advantage. Again, this means a significant change in knowledge, experience and solutions in understanding their role managers' habituation to the use and control of the use of existing knowledge, which was typical for the command and control management hierarchy and stable conditions. Not only do they have to come to terms with the fact that previously acquired knowledge and skills, sometimes for many years, evening or distance learning may not be adequate for long, but must also create a climate to share information and generate new knowledge. A compromise must be reached through awareness, and this, in turn, requires a full understanding of the problems. Best practice of management is to support managers in decision-making, helping them to better understand the working of their own intuition. Understanding context, managers will be able to not only bring costs in line with the culture, but also combine them in ways that make sense for their own sake, for the people who work for them and for the company that employs them. Managers too often left without this contextual understanding, while all of them are still waiting, they are part of "an organization that learns". "XXI Century Company shall promote and educate a way to improve and implement innovations. This idea is radical. It means that learning is a central tenet of the organization. It replaces control as fundamental labor management problems" (Poole &Uornera, 2002). "The success of the market increasingly depends on learning, yet most people do not know how to learn". The best practice in management development - focus on the learner and the learning process - frees people from the idea that exactly what they are studying is the most important, and if something is not "properly investigated" they tolerate failure. The question of culture arises in the atmosphere in which people are encouraged to "respect their mistakes" and do not hide the fact that they went forth, so that learning could take place. Command and control hierarchy encourages concealment of errors, "shifting the responsibility to others" and move away from responsibility. The transition to a culture of respect mistakes can be made only by force of example, the culture of avoidance of responsibility too deeply ingrained to change under the influence of only words. Managers may

try to create a learning environment, but if they recall their errors affecting the payment of their results, the protection of their own position becomes paramount. (Vyssema, 2000).

There is yet another point in connection with which managers; especially middle managers may be torn between persuasion and reality. All organizations are now more outward, observing signals or signs in the environment that could be indicative of new opportunities or threats. Information required from any possible source, but the command and control unit, within which are taken into account only knowledge which are at the heart of government, and only the center has the ability to transform information into knowledge hinders mid-level managers and prolongs reply actions. However, middle managers, who are expected to control costs and provide cultural changes, have a great opportunity to do something, and another, benefiting the company, generating information collected based on the experiences of people on the periphery of organizations working directly with customers or at work. These managers know that they could be a powerful driver of change, they are in key positions to combine strategic micro data (without context, that is, without regard to the organization), practical micro data (contextual), which can serve as a starting point for action to be made of both upper and lower levels. Management development can support mid-level managers in these positions, if reinforce understanding of the commercial value of the information obtained at the periphery, the ability to communicate this information to the superior management skills and encouragement of employees to their people that they shared information and jointly discuss new ways to perform tasks and practical improvements.

Two groups of words are often found in articles on the development of management. The first group concerns the state of tension, vigilance and includes the words “listen”, “watch” and “caution”, reflecting the need for understanding all the nuances that are rich in features but controversial surrounding environment. For example, “understanding” - the first word of the name of the program «AVIRA» (understanding, vision, imagination, responsibility, and action), adopted in France for senior executives. Program «AVIRA», derived from the study of the needs of senior managers in large international corporations in Europe, USA and Asia Pacific, focuses on the relationship between the manager, the organization and the environment. It focused attention on the environment, i.e., customers, competitors, partners, suppliers and co-production, is transformed into the greatest value if it becomes the responsibility of each and every person who knows his or her intuition to be received with respect. Managers at all levels can make sure that this is the case, but to do that you need a significant change in perceptions of what is important only that the knowledge possessed by the central government organizations (Keynes, 2002).

The need for organizations to become flexible, adaptive and curb information may best be met by integrating human development and design organizations so that the relationship between these two areas of development was agreed in every point. They can be connected by means of correlation of complexity of the work to be done, with the ability of the individual to cope with this complexity.

If problems are similar to all managers, their performance can vary greatly depending on the level of responsibility of the manager. Therefore, the practice of management is the accurate adjustment of program development needs of persons of a certain level of responsibility and training of people to move from one level to the next. An example is the work of the Centre for Management British Gas in 1980 and 1990. When the company British Gas was privatized in 1986, the board of directors concluded that their core business will flourish at the beginning of the next century, after examining alternatives, they settled on a strategy international expansion in the gas and oil sector. In the early 1980 's. Center management British Gas has developed a program of middle management focused on scenario thinking, applied to organizational change and helping managers to see which skills they would need in the coming years (Mylner, 2006).

The second series of programs called program business problems has been designed for superior managers. It is also used scenario approach to management development, training actions and teamwork. These programs have

become an important developmental experience that has become a counterweight to the strong functional organizational system that was privatization. At the end of 1980s,program experience for middle management, business applications and problems appeared understanding of different cultures have been used in the development of strategic management development programs to improve understanding of the strategic direction of business development senior managers from Canada, America, Africa, Russia, Germany and the UK. All these programs have been developed on the basis of development control, formed during the last thirty years at Brunel University in the UK (Mylner, 2006). British Gas Management Centre has used this structure, when the focus was developments in Eastern Europe and the Centre for three weeks to exercise hospitality to three senior executives from the Russian company "Gazprom". During the discussion it became clear that the head of the company "Gazprom" often works in remote areas where their primary objective is to create a city in which employees can live even before they start to get out of the ground gas or transport it. This means that managers are responsible not only for the management of the organization, but also for farms, schools and hospitals. In many cases, they are among the most important people in the structure of local government. The system of governance facilitated understanding the complexity of this role and, consequently, the required contribution management.

These visits led, in turn, to contact with the Leningrad Institute of Management (LIMA) and SDA Bocconi School of Management in Milan, as well as proposals from Lima joint program directors for British Gas and leadership potential “Gazprom”. Two courses were held in St. Petersburg. The first two weeks of each course were provided with Lima, who gave a basic understanding of Western management and economy, while the third week combined program was implemented with the directors of all the business units of British Gas. The starting point for the development of the program was taken over development system managers. This clarification has made it possible to adjust the input data in the program and provide support to people who are already at this level of leadership in “Gazprom” and properly prepare those who will likely be nominated on the board in the coming years. This system was also used in a course of management of Kazakhstan, Czech Republic, Australia, South Africa, India, Indonesia, Sweden and Germany. (Mylner, 2006)

As the complexity and variability in the environment continue to grow, external (need for information about what is going on around) and internal focus (ability to generate public education knowledge based on this information) will be even more powerful engines of management and organization design. Command and supervisory structure will continue to change in the direction of distributed control and decision-making directly immediately in response to the environment. Combating major shareholder Anglo-Saxon countries the economy is likely to remain strong, but because other systems consolidation of capital (e.g. buyout by a loan) have become commonplace, changes in relationships with suppliers of capital are likely to be done in the direction of support for distributed control and immediate response from the larger number of stakeholders.

The most powerful engine of global management are will and personal information technology. Internet has connected organizations around the world to obtain information that can be used to ensure competitiveness. Dissemination of information also has a strong influence on individual development, as it can provide tailored to the needs of the individual study at any time, in any place and at any pace. This training is also beyond the control of the rulers of the manager: “There is no central repository of knowledge on the net, but the curators of certain ideas” (Davenport, 1993).

3 CONCLUSION

Focusing on the environment and the need to make the most of the information gathered is likely to reinforce the need for people, who will use their individual assessment in order to understand what information may be relevant to them, and then give the value of the information and manipulate it to achieve maximum benefits. It will also strengthen the need for people who will share information and thus produce added value. However, people will realize their decision to cooperate and only if between the organization and there is mutual trust

that will not develop because it is "good to have ", or because people like to be “patronized”, but the specific reasons for the viability. This need is likely to allow some of the dilemmas in current practice, but not by the transition from command and control to supervisory concern and cooperation, and by the renewal of contracts of employment so that they take into account the need for a “deliberate confidence”. This is not a global feeling of warmth or affection, but rather a conscious adjustment depending on one person or another. It is not something to take for granted, but it must be implemented and supported by reliable commitments made between people who work together, regardless of whether they are in the same unit, the same organization and the same culture, or they are independent contractors who work on a long term or short term basis. Reliable management contracts with reciprocal obligations are likely to be matched to the primary managers of any organization.

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Received for publication: 25.03.2014
Revision received: 29.05.2014
Accepted for publication: 23.06.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Shterma, T. (2014, 07 15). Socioeconomic and organizational context of management. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 214-223. doi:10.12709/mest.02.02.02.22

*Style – **Chicago** Fifteenth Edition:*

Shterma, Tatiana. 2014. "Socioeconomic and organizational context of management." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 214-223. doi:10.12709/mest.02.02.02.22.

*Style – **GOST** Name Sort:*

Shterma Tatiana Socioeconomic and organizational context of management [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 214-223.

*Style – **Harvard** Anglia:*

Shterma, T., 2014. Socioeconomic and organizational context of management. *MEST Journal,* 15 07, 2(2), pp. 214-223.

Style – **ISO 690** Numerical Reference:

Socioeconomic and organizational context of management. **Shterma, Tatiana.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 214-223.

MEST Journal
DOI 10.12709/mest.02.02.02.23

CERTAIN ASPECTS OF THE CAPITAL AND LIQUIDITY OF BANKS IN BOSNIA AND HERZEGOVINA

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JEL category: **G21, G33**

Abstract

The latest standards in banking, as proposed by way of the regulations of the Third Basel Accord, aim to support banks in their tendency to absorb the shock waves produced by financial and economic stresses, no matter what their point of origin is. This document's standards require banks to increase their capital, improve its structure, and thus improve the liquidity risk coverage. Regulators all over the world the world tend to impose and accelerate the implementation of these common regulations. However, many countries have not even started the process. This group of countries includes the banking system of Bosnia and Herzegovina, which has done very little to implement the process, as seen from the level of its banks' capital and the model of establishing liquidity. The reason for such a state of affairs lies primarily with the regulators in Bosnia and Herzegovina, who have neither drawn up such regulations nor adopted them. An examination of the official data from commercial banks has shown that the banking system of Bosnia and Herzegovina can and should meet the suggested standards, despite the fact that the new model of establishing banks' liquidity is broader and more encompassing than the present one devised by the Banking Agency, because it takes into consideration more balance positions, both within a bank's assets and liabilities, but also includes all the significant off-balance positions of a bank, which have not been previously included. Our final conclusion is that the banks in Bosnia and Herzegovina should adopt and implement the standards of The Second Basel Accord, and then proceed towards the application of the more advanced standards contained in the Third Basel Accord. This means that the banks in Bosnia and Herzegovina should first increase their capital, which will enable them to increase the deposits, and the increased deposits will, in turn, enable the required level of liquidity.

Keywords: *capital, liquidity coverage ratio, risk, Bosnia and Herzegovina.*

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1 INTRODUCTION

This paper has come about as a result of the directives and conclusions published by the Basel Committee on Banking Supervision as the regulations of the Basel III standards, which

address the details of new global capital and liquidity standards, supported by the leaders of the G-20 at the 2010 Seoul summit. To give a specific example of a medium-sized bank, a test was conducted in which the liquidity ratio was calculated according to Basel III and according to the existing regulations (decisions) passed by the regulatory organs of Bosnia and Herzegovina, and the results obtained were then compared and their effect was established. Besides, all the countries which are members of the Basel Committee are obligated to introduce the Basel III standards as national regulations by the end of 2013, and their implementation should be carried out in phases by 2019. The banking system of Bosnia and Herzegovina should act in the same or a similar manner, because it has accepted the previous accords as well, but the dynamics and deadlines of implementation should be determined by the regulatory organs of Bosnia and Herzegovina, and they should not differ significantly from those established in other countries.

2 THE BASICS OF THE THIRD BASEL ACCORD

Basel III represents a global regulatory framework for stable banks, which consists of a set of reform measures aimed at providing support to the basic concept, i.e. the ability of banks to absorb the shock waves produced by financial and economic stresses, no matter what their point of origin is, or Basel III is an initiative for internationally coordinated regulatory change that is designed to offer a response to some of the inadequacies of the regulatory framework as it stood before the financial crisis of 2007-2011 (Gual, 2011). This is, in fact, a further, continual effort on the part of the Basel Committee to try to strengthen the regulatory framework of banks, supervision and the risk management function. The regulatory framework refers to the level of capital required to function as a shield against a bank's bankruptcy, generating increased confidence among the bank's clients and ensuring the bank's growth in the long term (Đukić, 2007). A higher level of capital, combined with a new way of establishing a bank's liquidity, should decrease the probability and severity of banking crises in the future. More precisely, the Basel III standards in banking establish a higher and better-quality level of capital in banks, a better and higher-quality coverage of the liquidity risk, and better measures for more successfully overcoming stress periods in banking, which include:

- a micro approach to a bank's safety, and
- a macro approach to the safety of a bank and the banking system as a whole.

Basel III's micro approach to safety tends to help increase the resistance of each individual bank in stress periods, because it establishes:

- a minimum common equity from 2 to 4.5% and a minimum Tier 1[1] equity from 4 to 6%. The minimum total equity (including both Tier 1 and Tier 2 equities) as a percentage of risk-weighted assets remains the same, i.e. 8%,
- various capital regulation instruments which have to meet stricter criteria, so that innovative/hybrid capital with incentives to purchase, which can currently be calculated according to Tier 1 may be abandoned over time, while the capital instruments of Tier 2[2] are coordinated. Tier 3 capital, previously available for covering market risks, will be eliminated, with a significantly more energetic supervision, risk management, and disclosure standards.

Through its macro approach, Basel III is introducing completely new elements into the global regulatory framework, such as:

- capital conservation buffers as additional capital, which may help protect banks from credit losses, and which can be activated in a

[1] Common Tier 1 capital consists of the sum total of the following elements: 1. common stock issued by banks which meet the classification criteria as common stock for regulatory purposes; 2. stock surplus resulting from the issue of instruments included in Tier 1; 3. retained earnings; 4. accumulated other comprehensive income and other disclosed reserves.

[2] Common Tier 2 capital consists of the sum total of the following elements: 1. instruments issued by banks that meet the criteria for inclusion in Tier 2 capital (and are not included in Tier 1 capital); 2. stock surplus (share premium) resulting from the issue of instruments included in Tier 2 capital; 3. instruments issued by consolidated subsidiaries of a bank, held on behalf of third parties that meet the criteria for inclusion in Tier 2 capital and are not included in Tier 1 capital.

period of stress. The buffer value is 2.5% of common equity. Also provided are counter-cyclical buffers, which may be disclosed during a crisis, and may be an extension of capital buffers;

- a minimum leverage ratio will be introduced for systemically important banks, which should act as a preventive measure against further exposure to risk;
- greater capital requirements for commerce and securitization activities have been announced. Commerce reforms should initiate an introduction of new risk-weighting in order to manage the risks in commerce portfolios better;
- Basel III increases capital requirements and risk management standards for contracting parties exposed to credit risks stemming from derivatives, securities and repo-financing transactions. The goal is to decrease the risk of transferring shocks between banks, and the measures include, for instance, the use of stress inputs in order to determine capital requirements for contracting parties exposed to credit risk and market losses stemming from a deterioration of the creditworthiness of contracting parties;
- Basel III also contains measures pertaining to the use of external credit ratings within the capital framework. Among other things, Basel III incorporates elements of The International Organization of Securities Commission (IOSCO) into the Code of the Basic Credit Ratings Agency, and will require banks to conduct internal estimates of the outer securitization exposures, and
- introduces a new way of measuring liquidity by way of the minimum Liquidity Coverage Ratio (LCR) and the minimum Net Stable Funding Ratio (NSFR). Although a long adjustment period is allowed, markets are likely to anticipate the required changes and penalize banks that fall substantially short of the LCR and NSFR liquidity requirements. Thus banks need to increase the liquidity of their assets and reduce the liquidity of their liabilities. and reduce the liquidity of their liabilities (Allen, 2012).

For many banks, the implementation of the Third Basel Accord represents a complex process which takes a certain time to be applied, i.e. for establishing the national regulations on the basis of it, so that it is implemented in stages (phases) which, according to the Basel Committee, should unfold as follows:[3]

Table 1 The projected phases of the implementation of the Third Basel Accord

	Phases	2013	2014	2015	2016	2017	2018	2019
C	Minimum Common Equity Capital Ratio	3.50%	4%	4.50%	4.50%	4.50%	4.50%	4.50%
A	Capital Conservation Buffer				0.625%	1.25%	1.875%	2.50%
P I	Minimum common equity + capital conservation buffer	3.50%	4%	4.50%	5.125%	5.75%	6.375%	7.0%
T	Phase-in of deductions		20%	40%	60%	80%	100%	100%
A	Minimum Tier 1 Capital	4.50%	5.5%	6.0%	6.0%	6.0%	6.0%	6.0%
L	Minimum total assets		8%	8%	8%	8%	8%	8%
	Minimum total assets + conservation buffer		8%	8%	8.625%	9.25%	9.88%	10.50%
L I	Liquidity coverage ratio – minimum requirement			60%	70%	80%	90%	100%
Q	Net stable funding ratio						Min std.	

[3] Cf. http://www.bis.org.

Many global banks have already commenced increasing their capital even without the formal rules, with 100 largest world banks having already made a significant progress in that area. However, it cannot be said that the implementation of Basel III is on a satisfactory level, which is understandable, taking into consideration that the final deadline for its definitive implementation is 2019.

3 CRITIQUE OF THE BASEL ACCORDS REGULATIONS

Today, there already are theorists, as well as professionals, who criticize the regulations and requirements of the Third Basel Accord, especially in relation to the level of capital and the method of calculating it, and also in relation to the new model of calculating a bank's liquidity level. Some are of the opinion that increasing the level of capital is not good at all, especially if new investors appear, for infusion of capital from the outside will affect control over banks, especially when new investors decide to cash their investments in a bank (Berk, 2011). Otherwise, banks tend to hold significantly more capital than required by regulators because regulatory requirements are not the only determining factor of actual capital levels (Slovik, P., & Cournede, B, 2011). Regulators from the EU have on various occasions criticized the USA for its slow implementation of the Basel Accords regulations in general, and on account of the fact that its banks have fallen behind in that respect, because they have not managed to make any significant progress in relation to the level of the banks' capital in the past. Regulators from some countries are still working on their own regulations in that respect,[4] so that, for instance, banks in the USA, apart from the regulations of the Basel Accord (capital adequacy ratio), also use the rule of financial leverage or the model of the capital-total bank capital ratio when establishing the criterion of the necessary level of capital in banks. According to the existing Basel regulations, a well-capitalized American bank is one having the total assets-risk-weighted assets ratio of at least 10%, and the primary (basic equity, Tier 1) capital-risk-weighted assets ratio of at least 6%, while simultaneously, according to the indicator of the financial leverage comprising the primary capital (Tier 1)-total bank assets ratio, the capital of a well-capitalized bank should be 5.5%. As opposed a well-capitalized one, a well undercapitalized American bank achieves the capital adequacy ratio of less than 6%, and the primary capital-risk-weighted assets ratio is under 3%, just as the financial leverage indicator is under 3% (Rose, 2003).

In such a situation, critics of the Basel regulations in the USA favor the financial leverage indicator, because they consider it to be more realistic, since it encompasses all the assets in a bank's balance, and not only the risk-weighted ones. Thus, for instance, FDIC[5] Vice-President Mr. Hoeing thinks that, through the Third Basel Accord, international regulators have agreed to require of banks to have a larger number of buffers intended to remediate bank losses until they achieve their minimum goal, which is actually an illusion of precision in defining insufficiently adequate capital. In his opinion, all Basel Accords on capital, including the projected Basel III, are looking backward and trying to assign risk-weights in the future, which is not logical and cannot work out, for bank managers adjust their balances by disclosing their risk-weighted assets as being at a much lower level than their total assets. Instead, he suggests that regulators should focus on another capital-related criterion, one which more accurately reflects the capital position of a bank, i.e. the capital-total assets ratio, or the financial leverage, because it enables a simpler and more direct insight into the amount of loss a bank's capital may absorb. Why is that so? Because the world financial crisis of 2008 showed that the financial leverage ratio of at least 3% (as proposed by Basel III) was too low, and that it was found out too late that less than 3 cents of primary capital per dollar of balanced assets was not sufficient to absorb even the smallest financial losses, let alone great shocks (Hoeing, 2013).

Adjustment of capital requirements is the main political problem for both regulators and governments worldwide, as well as one of the key factors to be reviewed when assessing the security and the soundness of a bank's operations

[4]The USA, Great Britain, Germany.

[5]FDIC – Federal Deposit Insurance Corporation, founded by the US Congress for the purpose of maintaining the stability of and public trust in the national banking system.

(van Greuning, 2006). Basel III certainly shows that banks should use more of their own capital for financing their own assets than according to prior rules. However, this is a clear warning that there may be an increase of some bank expenditures, whose measurement requires a careful consideration of a wide array of questions. It is required, therefore, to calculate expenses created by an increased employment of capital, with a lesser debt. Without making such a calculation, there can be no estimate of the precise expenses or of the optimum level of bank capital, and the conclusions about the required level of capital will probably not be realistic (Miles, 2012).

Presumably, we can accept both of the above views. However, we are left with the impression that the critics of the proposed solution have directed their ire more toward the regulation complexity than toward the level of capital that will be required from banks. In any case, bank capital carries both advantages and expenditures. The advantages are felt by bank owners, for their investments become safer, reducing the possibility of going bankrupt, but bank capital is expensive, for the higher the amount of capital, the lower the returns (Mishkin, 2010). As for the banking system of Bosnia and Herzegovina, the implementation of the Third Basel Accord is not brought into question. However, considering that the regulatory organs of Bosnia and Herzegovina have neither proposed nor adopted the banking standards of Basel II yet it is not logical to implement the derived regulations before the basic ones, from which the former have been derived[6]. In fact, it is impossible and illogical to implement the rules of Basel III if we have not applied those from Basel II yet. Now, the banking agencies is still only on the adopted strategy of capital measurement and capital standards under the Basel II agreement and nothing more (Agencija za bankarstvo Republike Srpske, 2009).

4 LIQUIDITY AND LIQUIDITY RISK

A special segment of the Third Basel Accord deals with liquidity measurement in commercial banks. Liquidity and insolvency are terms and phenomena that have always attracted the attention of both theorists and researchers, and also of those who deal with them on a daily basis, i.e. individuals and decision-makers, which means the management of both small and big economic and non-economic legal entities. So, all the aforementioned forms of social organization are in either one or the other state, i.e. either solvent or insolvent. However, economists use the term liquidity (solvency) mostly to describe the ease with which an asset may be transformed into a medium of exchange (Mankiw, 2005), and they express it through ratios (Lat. *racionalis*), which express in numerical terms the interdependence of two or more phenomena (Peterson, 1994). However, if an individual or a company does not have or cannot establish a balance between payment obligations and their affordability, which is to say, if payment obligations are higher than the funds available for their payment, there appears a problem, or the state of illiquidity (insolvency). Thus, insolvency can be defined as a hiatus in asset circulation in the process of a company's reproduction (business insolvency), or the impossibility of a free flow of the essential factors of the business process and their transformation from monetary into material forms, and vice versa, whereas liquidity presupposes unconditional fulfilment of due payment obligations over a particular period of time, or the ability of a corporation to meet its short-term financial obligations in a timely manner (Šalić, 2013) or, it is a relationship of dependency and a combination of short-term forms of capital and assets in which the short-term money engaged (Tintor, 2009).

Basel III defines liquidity as the ability of banks to finance an increase in assets and fulfill their liability obligations on due date without making unnecessary losses, while the liquidity position presupposes a solvent assets-obligations ratio, or the expected cash inflow and outflow, over a certain period of time (Basel, 2010). Otherwise, the resulting liquidity risk which may be said to represent a current or future threat to profit or capital, stemming from a bank's inability to fulfill its obligations on due date (Šalić, 2012). Some

[6] In Bosnia and Herzegovina, work still goes on, with the help of USAID and within the framework of the PARE program (Partnership for the Advancing Reforms in the Economy), on drawing up and adopting the regulations pertaining to the implementation of the Second Basel Accord.

authors think that the liquidity risk represents a "derivative" form of risk, and that it is actually a consequence of a bank's exposure to other risks, on account of which banks tend to marginalize it. Namely, a research has shown that up to 67% of risk managers in American banks think that the liquidity risk in their banks is not pronounced at all, and therefore they do not review it. The importance of liquidity is reflected and clearly visible only in crisis situations (Turner, 2002).

According to Matz, there are three basic forms of liquidity risk. These are: uncoordinated liquidity risk, increased liquidity risk and market liquidity risk. An uncoordinated liquidity risk occurs due to a lack of coordination between the assets and the liabilities of a bank, when the bank should manage the liquidity risk through a policy of balancing the due date balance structure and a regular monitoring of the dynamics of due dates of deposits and investments, and also by monitoring, analyzing and reporting on the state of obligations and receivables on a daily basis. An increased liquidity risk is a risk which appears due to a need for higher amounts of liquid funds which banks could encounter in the future. A market liquidity risk appears due to a potentially weaker liquidity of the financial market, which has as its consequence the impossibility of selling or purchasing liquid assets (Matz, 2001).

The degree of liquidity risk depends on the concrete position of a bank on the financial market, so that the same liquidity position of a bank may be satisfactory in one situation and inadequate in another. For this reason, a bank has to examine the influence of potentially stressful situations on its liquidity (deposit outflow, illiquidity of great debtors, etc.). The Third Basel Accord prescribes the standards which banks should observe when dealing with liquidity and liquidity risk, as well as the contents and form of the model of calculation and reporting on the liquidity ratio, all for the purpose of measuring and monitoring a bank's liquidity position. According to this agreement, there are two chief requirements: qualitative and quantitative ones.

4.1 Qualitative requirements

Qualitative requirements are listed in "The Principles of Liquidity Risk Management", dating from September 2008, published by the Basel Committee for Banking Supervision as guidelines for establishing a common framework for liquidity risk management on the international level (Basel Commettee for Banking Supervision, 2008). According to this document, banks should establish a robust framework for liquidity risk management in order to secure the maintenance of a satisfactory level of liquidity, including the reserves of unrestricted high-quality liquid assets, so that they could withstand a series of stressful events, including a loss or damage of both secured and unsecured funding sources.

Apart from the prescribed standards and tools, this framework should also include:

- the Supervisory Board criteria pertaining to a clearly specified level of liquidity risk tolerance (limits and minimums), in accordance with an appropriate business strategy and the role of a bank in the financial system,
- creating a strategy, policy and practice for a bank's liquidity risk management, in accordance with the established risk tolerance, i.e. this framework should define:
  - a financial strategy which will enable an effective diversification of the financial sources of a bank and their financing deadlines,
  - an algorithm of strategy implementation, with a constant presence on selected financial markets, and maintaining strong relations with the fund sources for the purpose of their diversification,
  - an algorithm of regular measurement of one's own financial potential, for the purpose of quick fundraising from all sources,
  - an algorithm of identifying the main factors influencing a bank's ability to acquire new sources of funds for the purpose of securing their validity and success,
- data review and regular reports submitted by a bank's management to its supervisory board,
- control and approval of the strategy, policies, and practice pertaining to liquidity management, at least once a year by a bank's Supervisory Board,
- calculation of the expenses, compensations and liquidity risks of a bank, and their inclusion in the internal pricing and output measurement for the purpose of approving

placement of new products for all significant business activities,
- all quality procedures of identification, monitoring and control of the liquidity risk, with a projection of the corresponding, all-inclusive framework of cash flows originating, from the balance and out-of-balance positions over a period of time,
- active monitoring and control of a bank's exposure to the liquidity risk, and of the need for fund sources among legal entities and financial institutions, taking into consideration the legal, regulatory and operative limitations of the possible transferability of liquidity,
- active management of the positions and liquidity risks of a bank during a single day, for the purpose of settling its obligations by due dates in all situations (both normal and stressful), so that it could contribute to an unimpeded functioning of the payment operations system,
- management of a bank's collateral positions by making a classification of encumbered and unencumbered assets,
- timely monitoring of the physical locations of legal entities with a collateral on offer,
- regular testing of a bank for stress situations, with short-term and long-term possible scenarios together, identifying sources of potential liquidity deformations, and also for the purpose of securing that the existing level of a bank's exposure to risk remains in keeping with the established internal level of liquidity risk tolerance,
- use of stress testing results for the purpose of constant readjustment of a bank's strategy of liquidity risk management, as well as designing efficient plans for dealing with unforeseen situations, having an official plan for financing unforeseen situations, with a clearly defined strategy for dealing with liquidity shortage in critical situations,
- maintenance of bank reserves unencumbered with high-quality assets, which will be held as insurance against a number of liquidity-related stress scenarios, including those pertaining to loss or damage of unsecured and normally available secured fund sources, and that there should be no legal, regulatory or operative obstacle to using these assets for the purpose of obtaining funds,
- that a bank should publicly and regularly publish information about the validity of its liquidity risk management framework and liquidity position.

4.2 QUANTITATIVE REQUIREMENTS[7]

The basic role of quantitative liquidity requirements is an attempt to surpass and eliminate the drawbacks identified during the last economic crisis in the financial sectors of many countries (2007-2008), for the purpose of harmonizing the measurement model and liquidity risk management. What this is all about is, actually, an accounting-based assessment of the risks of liquidity and failure to fulfil financial obligations on due date (Damodaran, 2007).

According to this request, banks should periodically:

- determine their liquidity positions according to the methodology prescribed for each ratio and monitoring tool. The basic prescribed liquidity ratios are:
  - LCR – the Liquidity Coverage Ratio,
  - NSFR – the Net Stability Financial Ratio
- measure and monitor their liquidity positions by employing the following methods:
  - analysis of contractual maturity mismatch,
  - analysis of concentration of funds,
  - analysis of available unencumbered assets,
  - analysis of liquidity coverage ratios in all relevant currencies,
  - analysis of stress tests
- adopt minimum requirements for risk management, as well as additional standards and tools for determining and managing the liquidity risk which are suitable for the scope and complexity of their activities,
- design, adopt, and maintain models for planning and maintaining an adequate level of liquidity, which should be consistent with the

[7] The quantitative requirements are prescribed in Basel III: The International Framework for Liquidity Risk Management, Standards and Monitoring, published by the Basel Committee on Banking Supervision in December 2010.

internationally established principles, guidelines, and standards,
- adopt acts for a regulation of quantitative and monitoring measures which have to be implemented according to the adopted methodology, and
- adopt acts for prescribing qualitative standards for identification, measurement, monitoring, and liquidity risk management, through their policies and procedures for liquidity risk management.

4.2.1 The liquidity coverage ratio (LCR)

The liquidity coverage ratio (LCR) is calculated as a quotient of highly liquid assets and the total of projected net cash outflow during a period of thirty calendar days (Basel Commettee for banking Supervision, 2010).

$$LCR = \frac{\text{Highly liquid assets}}{\text{Total of projected net cash outflows a period of 30 days}} \geq 100\% \quad (1)$$

When determining LCR, each bank must: determine its short-term liquidity position by way of calculations which should secure that the bank maintains an adequate level of unencumbered, high-quality assets that can be converted into cash to meet the liquidity requirements within a period of thirty days; the ratio value cannot be less than 100%, and it must be met continually on a consolidated basis; identify mismatches within the span of thirty days and secure fund sources sufficient for filling the gaps within that period; determine the ratios on a daily basis and report the results in a prescribed way. LCR constitutes high-quality assets which every bank should have, and which should cover the total net cash outflow during a thirty-day period according to the prescribed stress scenario. In order to be qualified as high-quality, those assets have to be liquid[8] during the stress period. They are classified into Level 1 Assets and Level 2 Assets, according to their characteristics.

Level 1 Assets should comprise: cash, central bank reserves which can be withdrawn in a stress situation, marketable securities (issued by states and central banks) whose credit risk is assigned the weight of "0%" according to the Standardized Approach of Basel II Standard (Bazelski odbor za nadzor banaka, 2004), marketable debtors' securities whose weight is higher than "0%" if issued by the state or the central bank in a country in which there is a reaction to liquidity risk, and marketable debtors' securities whose weight in higher than "0%" if issued by the state or the central bank in a foreign currency.

Level 2 Assets should be diversified according to several criteria (issuers, participants, types), and cannot exceed 40% of the total value of high-quality assets after a discount rate of at least 15% has been taken off the current market value; what it boils down to are marketable securities and corporate bonds.

Marketable securities are receivables due to the state, or securities that the state guarantees for, as well as receivables due from central banks, on the condition that they are assigned the weight risk of 20% according to the Standardized Approach of the Basel II standards for credit risk, that they can be traded on big and active repo or cash markets with a low level of concentration, that there exist attested records testifying that those securities are a reliable source of liquidity on the market and under stressful conditions on the market during a period of thirty days, that those securities are not a liability of the bank selling them or of any of its related sections.

Corporate and covered bonds have to meet the following requirements: that they were not issued by a bank or any of its related sections; that they were not issued by any financial institution or any of its related sections; that these assets have a credit rating attested to by a reputable external institution dealing with credit estimates (the rating must be at least AA), or that it does not have a credit appraisal attested by a reputable agency, but is internally ranked in such a way that it is comparable with the aforementioned rating system; that these securities are used to trade on large and deep cash markets with a low level of

[8]This means that it can easily and quickly be sold or bought, cashed in or marketed on the financial market.

concentration, and that there are attested records testifying that those securities are a reliable source of liquidity on the markets and under stressful conditions on the market during a period of thirty days.

The total outflow of net monetary funds is the sum total of expected outflow, reduced by the sum total of expected inflow of those funds in a stress scenario, for the next thirty days, and it is calculated by multiplying its liability balance by the rates or assigned weights according to which they are expected to expire or be withdrawn during the stress period. The total expected inflow of monetary funds is calculated by multiplying the remaining assets balance or contracted receivables by the rates or weights according to which they are expected to become due, according to the scenario of the aggregate amount of 75% out of the total expected cash outflow.

4.2.2 The net stability financial ratio (NSFR)

The net stability financial ratio (NSFR) represents a supplement to LCR and a promoter of structural changes in banks' risk liquidity profiles, from short-term financial discrepancies toward a more stable, long-term financing of assets and business activities. It is calculated by dividing the available stable funds by the value required for stable financing over a period of one year. This ratio has to be greater than 100%, i.e. the available stable funds have to be higher at all times than the required stable funds, and it is every bank's obligation to calculate it at least once a month and report the results to the supervisors, which is to say:

$$NSFR = \frac{Available\ stable\ funds}{Required\ stable\ funds} > 100\% \qquad (2)$$

Stable sources of funding are made up of the stockholders' capital and those obligations which are supposed to be reliable sources of funds over a one-year period under the conditions of prolonged stress. The required stable funds comprise cash unencumbered as a collateral, as well as unencumbered short-term securities, repo instruments, loans given to banks and other financial institutions with maturity periods of less than a year, securities with residual maturity periods of one year or exceeding one year (in the case of claims from governments and central banks), corporate bonds with the AA rating, other securities with a credit weight of 20%, gold, etc.

4.3 Liquidity risk monitoring tools

Monitoring tools, or monitoring procedures, constitute models and forms of measurement and monitoring liquidity risks which every bank should employ to manage its liquidity positions in accordance with them. Those forms of measurement and liquidity risk monitoring can be expressed through analyses of: contractual maturity mismatch, the concentration of funds, the available unencumbered assets, liquidity coverage ratios and through stress tests.

The purpose of analyzing contractual maturity mismatch is to identify the gaps between the contracted inflow and outflow of liquidity over specific time intervals, by way of which it is learned how many additional fund sources a bank needs to have in each of these intervals, in case the funds outflow happens in the earliest possible way. This analysis is conducted for all currencies in which a bank has a significant exposure. An analysis of the concentration of funds should indicate the way in which a diversification of depositors and other external fund sources should be made in order to reduce dependence on a single source or a small group of sources for those funds. The concentration of funds is considered to be the amount of funds in the domicile currency from any single source or a group of related sources which includes more than 1% of the total balance sheet of a bank, while that value for a foreign currency amounts to 5%. The goal of this type of analysis is to identify any significant reliance on funds that would create problems for a bank's liquidity if they were withdrawn.

The available unencumbered assets are those which are marketable as a collateral on secondary markets, and are used for settling a potential lack of liquidity in the immediate future. These assets must not be deposited, but must be freed from all restrictions concerning their use by a bank.

An LCR analysis is an analysis for each currency in which a bank has such a level of exposure that one could identify a potential currency mismatch which may not be evident while calculating its global LCR.

In the process of planning for unexpected situations, banks should prepare for liquidity management in stressful situations. The methodology for calculating LCR and NSFR is based on a stress scenario for the purpose of

harmonizing the liquidity risk measurements according to international practice. Creating alternate scenarios is an obligation of each bank and primarily depends upon a bank's own profile of liquidity risk. In that sense, banks should periodically test alternate scenarios and estimate their influence on the cash flow by using reasonable assumptions related to market liquidity factors and internal financing factors. It is a bank's obligation to present the results of stress tests to supervisors and get an opinion from them, especially in a situation when there is a liquidity-related problem, as the responsibility for a bank's liquidity lies primarily with the bank's management, because the management governs the bank and has the obligation to keep it safe from stresses, by which it also protects, first of all, the bank's depositors, as well as the stockholders.

5 DETERMINING LCR IN A BANK IN BOSNIA AND HERZEGOVINA

Regardless of the fact that the banking system of Bosnia and Herzegovina at present is nowhere near to adopting the regulations of the Third Basel Accord, due to its great significance and frequent use, an LCR test was conducted for a commercial bank in Bosnia and Herzegovina, over different time periods and according to different calculation models, i.e. according to the Basel III standards and according to the regulations of the regulatory organs of Bosnia and Herzegovina. Before arriving at the precise value of LCR, it is necessary to determine its harmonized values, which are calculated by multiplying the corresponding balance sheet positions by weights, whose minimum values are set by regulations, and regulatory organs may increase or decrease these minimum values in keeping with their safety estimate and according to the degree of probability of its happening.

Tables 2, 3, 4 and 5 show what happens with LCR when the results of a single bank are observed over two different periods of time. These are accounting values which, "looking backward", represent indicators of value based on previous formation and spending of assets (Brealey, 2009). From Table 1, it is evident that the balance of high-quality cash of the bank under observation is significantly lower in the second period observed, and that this reduction was particularly due to a decrease of that bank's reserves in the Central Bank. The aforementioned data were deliberately taken from the middle of one and almost from the middle of another business year (30th June 2011 and 31st August 2012 respectively)[9], so that there should not be any doubt concerning the validity of the data, because if the data had been taken from the middle of one and the end of another year, they would not have been comparable. Why is that so?

Because each bank pursues different credit and liquidity policies during these periods: the accounts are settled at the end of a year, when most banks tend to get rid of their cash, transforming it mostly into loans and partly into securities, thus increasing their income, so that the final financial report should be as good as possible and the profitability rates (ROE; ROA) realized at the highest level possible. It is also evident that, in our circumstances, there are no Level 2 Assets and that the sum total of highly-liquid assets is actually Level 1 Assets. But regardless of the lower balance of assets from the second year in comparison to the first one, the funds outflow is almost the same in the second year, or merely 2% higher than in the previous year (Table 2). This means that the bank's funds outflow is the more uniform, constant, obligatory and certain portion of its total monetary flow, and that practically the value of the liquidity ratio depends more on the inflow than on the outflow. Why is that so? Because all deposits, except a vista deposits, have their own maturity periods, i.e. deadlines by which they must be repaid, or in stock, or in the clients' accounts on a precisely stipulated date. The very fact that the inflow balance is lower, and that the outflow balance remained virtually the same, shows that the liquidity ratio will also be lower in the second than in the first period. However, it is first necessary to establish another element of determining liquidity according to the Thirds Basel Accord, and that is determining the inflow of the other side.

[9] Data from the analytical records of a medium-sized B&H bank and a report from The Banking Agency of Bosnia and Herzegovina.

Table 2: Determining high-quality liquid assets according to Basel III

A	DETERMINING HIGH-QUALITY ASSETS							(in 000 KM)
No.	DESCRIPTION	30.06.2011.			31.07.2012.			Index 12/11
		Weight	BS	Result	Weight	BS	Result	
I	LEVEL 1 ASSETS							
1	Cash	100	51.867	51.867	100	42.948	42.948	83
2	Marketable securities	100	160	160	100	1.308	1.308	818
3	Reserves in CB	100	107.206	107.206	100	36.975	36.975	34
4	Claims from the government and CB	100			100			
5	Claims from the government in foreign currency	100			100			
6	Other	100	153	153	100	52	52	34
	TOTAL LEVEL 1		159.386	159.386		81.283	81.283	51
II	LEVEL 2 ASSETS							
1	Claims from the government and public Co, with p= 20% SA Basel II	85	-	-	85			
2	Corporative bonds AA and >	85	-	-	85			
3	Co covered bonds AA and >	85	-	-	85			
	TOTAL LEVEL 2		-	-				
III	**TOTAL LIQUID ASSETS**		159.386	159.386		81.283	81.283	51
IV	40% Liquid assets	40	63.754	63.754	40	32.513	32.513	51

Table 3: Determining fund outflow according to Basel III

B	DETERMINING LIABILITY OUTFLOWS							(in 000 KM)
No.	DESCRIPTION	30.06.2011.			31.07.2012.			Index 12/11
		Weight	BS	Result	Weight	BS	Result	
I	RETAIL DEPOSITS		160.213	5.277		179.240	6.203	118
1	Deposits up to 30 days		95.288	5.277		112.394	6.203	118
1.1	Secured transactional accounts	5	78.366	3.918	15	94.224	4.711	120
1.2	Deposits up to 35.000 KM	5	6.671	333	100	6.491	323	97
1.3	other, foreign currency – time deposit	10	3.437	344	0	3.385	339	98
1.4	Unsecured transactional accounts	10	6.814	682	0	8.294	830	122
2	Time deposits > 30 days	0	64.925	-	0	66.846	-	-
II	UNSECURED FUNDS		132.037	117.259		154.277	119.251	102
1	Stable small clients	5	5.000	250	50	4.651	232	93
2	Less stable small clients	10			50			

B	DETERMINING LIABILITY OUTFLOWS							(in 000 KM)
3	Legal entities with operative relations	25			100			
4	A portion of previously insured	5			100			
5	Corporate banks' deposits	25	4.000	1.000	25	29.370	7.343	734
6	Deposits by the state, CB, public companies	75	24.410	18.307	75	34.303	25.727	141
7	Deposits by the state, CB time deposits	75	3.300	2.475	75	16	12	0
8	Other legal entities	100	91.063	100	100	84.434	84.434	93
9	Other legal entities – time deposits	100	4.264	4.264	100	1.502	1.503	35
III	SECURED FINANCING							
1	Legally secured deposits	0						
2	Level secured deposits	15						
3	State deposits of the weight 20%	25						
	All other insured deposits	100						
IV	ADDITIONAL REQUESTS							
1	Net liquid assets derivatives							
2	Derivatives – market changes							
3	Derivatives – changes - without N1							
4	Securities up to 30 days							
5	Commercial securities							
6	Other contracted outflow							
V	**TOTAL OUTFLOW**		292.250	122.636		333.518	125.455	102

Therefore, it is a matter of determining inflow on the basis of repo transactions and other inflow from a partner side (Table 3), which acts as a correction of the already established outflow from the previous table. Actually, it is a matter of offsetting the outflow against the inflow of the other side, thus arriving at the category of net outflow, which represents a position with which the inflow from the periods observed is compared.

Table 4: Inflow of the other side according to Basel III

C	DETERMINING INFLOW FROM THE OTHER SIDE							(in 000 KM)
No.	O P I S	30.06.2011.			31.07.2012.			Index 12/11
		Weight	BS	Result	Weight	BS	Result	
I	Inverse repo transactions							
1	Level 1 Assets	0			0			
2	Level 2 Assets	15			15			
3	All other assets	100			100			
4	Credit /liquidity instruments	0			0			
5	Deposits in other financial institutions	0			0			
6	Deposits in the Central Bank	0			0			

C	DETERMINING INFLOW FROM THE OTHER SIDE					(in 000 KM)		
II	Other partner's inflow		23.739	11.869		70.450	35.225	297
1	Claims from retail	50	6.875	3.437	50	8.538	4.269	124
2	Claims from others (apart from those already listed)	50	16.865	8.433	50	61.912	30.956	367
3	Claims from other financial institutions	100			100			
4	Net derivative claims	100			100			
III	Total cash inflow		23.739	11.869		70.450	35.225	297

Table 5: Net outflow according to Basel III

D	DETERMINING NET OUTFLOW					(in 000 KM)	
No.	DESCRIPTION	30.06.2011.			31.07.2012.			Index
		Weight	BS	Result	Weight	BS	Result	
I	Net cash outflow (B-C)			110.767			90.229	81

Table 6: the Liquidity Coverage Ratio according to Basel III – LCR

E	DETERMINING LCR						
No.	DESCRIPTION	30.06.2011.			31.07.2012.			Index
		Weight	BS	Result	Weight	BS	Result	
I	LCR = A / D			144%			90%	62,5

Finally, LCR is determined by relating the highly liquid inflow from Table A to the net outflow from Table D, for the periods observed:

The liquidity coverage ratio (LCR) was significantly higher in the earlier period observed than in the later one (Table 6); more precisely, in the second period (August 31st, 2012) it was lower by 37.5% and therefore negative, which means that the bank was illiquid in the second liquidity measurement thirty-day period. This means that it is not or will not be able to settle all its short-term obligations, i.e. that the bank will not be able to fully cover its obligations pertaining either to the citizens' deposits of up to 30 days, or the unsecured obligations, secured financing, or some additional requirements which constitute obligations on the basis of: derivatives, credit instruments, guarantees and letters of credit.

6 ANALYSIS OF SIMILARITIES AND DIFFERENCES IN MEASURING THE LIQUIDITY RATIO

Measuring liquidity up to 30 days according to the regulations passed by the Banking Agency of Bosnia and Herzegovina, we find in our example that the bank is liquid in both periods (Table 7).

Table 7: The liquidity coverage ratio according to the Banking Agency

No.	DETERMINING BANK LIQUIDITY ACCORDING TO BANKING AGENCY	30.06.2011.	30.7.2012.	Index 12/11
1.	FINANCIAL ASSETS IN BS 000KM	1-30 days	1-30days	
1.1.	Monetary funds and deposits with other banks	159.219	79.975	50
1.2.	Securities until maturity			
1.3.	Loans given to other banks			
1.4	Credits, other claims	23.611	64.611	274
1.5.	Trading assets	50		
1.6.	Other financial assets	1.920	5.520	288
	TOTAL:	184.800	150.106	81

No.	DETERMINING BANK LIQUIDITY ACCORDING TO BANKING AGENCY	30.06.2011.	30.7.2012.	Index 12/11
2.	FINANCIAL OBLIGATIONS IN BS	1-30 days	1-30days	
2.1.	Deposits and still undue unsettled obligations	167.819	145.702	87
2.2.	Loans taken from other banks			
2.3.	Obligations toward the government			
2.4.	Obligations pertaining to taken credits and other loans	275	534	51
2.5.	Subordinated debts and bonds			
2.6.	Other financial obligations	4.922	5.576	113
	TOTAL:	173.016	151.812	88
3.	DIFFERENCE	1-30 days	1-30days	
a)	AMOUNT = BIGGER FINANCIAL ASSETS = (1 – 2)	11.784		
b)	AMOUNT=BIGGER FINANCIAL OBLIGATIONS = (2–1)		1.706	
	OBLIGATION SETTLEMENT	1-30 days	1-30days	
I	Achieved % = (1) TOTAL / (2) TOTAL x 100	106,81	98.88	
II	Prescribed minimum %	85	85	100
III	More than the prescribed minimum (I-II) in %	22	14	63.62
IV	Less than the prescribed minimum (II-I) in %	-	-	

Table 8: Similarities and differences between the models for establishing liquidity

CRITERIA	AGENCY	BASEL III
Assets coverage	lower	higher
Assets weight-risk	lower	higher
Liability coverage	lower	higher
Liability weight-risk	lower and higher	lower and higher
Out-balance coverage	-	higher

By up to 22% in the first and 14% in the other period observed, the bank had more short-term assets than short-term liabilities, meaning that it was highly liquid, and therefore far from illiquidity. According to the criteria provided by the Banking Agency, the liquid level of assets is also lower in the second period observed than in the first one; however, the bank was not illiquid but liquid in both cases. It is obvious that there are differences in the way of determining the degree of liquidity between the models currently used by the Banking Agency and the ones suggested by the Third Basel Accord. However, the question for the beneficiaries of these models is which model is more correct, or to be more precise, which one is more useful with regard to protection against illiquidity?

In order to answer the previous question, we will conduct a short analysis of both models with the help of Table 8.

As is clearly visible, when one analyzes all the previous tables, one can conclude that the model of the Third Basel Accord is wider and more encompassing because, unlike the one used by the Banking Agency, it:

- deals with more positions in assets and with higher weight-risks (100), meaning that the numerator in the formula is always higher (it also covers various claims), and with greater chances of achieving a higher liquidity ratio,
- also includes more positions in liabilities with lower and higher weight-risks, but in the positions which are significant for the final outcome of the liquidity ratio (transactional deposits); weight-risks are maximum (100), so

that the chances for achieving a lower liquidity ratio are higher,
- includes also the out-balance positions, especially those of issued guarantees and opened letters of credit which can easily be transformed into obligations, and then into outflow of financial funds for the bank,
- the ratio of the liquid assets and the total projected net cash outflow within the period of 30 calendar days must be higher than 100%, and
- if the bank is liquid according to the old system of liquidity settlement, according to the Third Basel Accord it is illiquid.

Thus, the answer to the previous question, that of which model is more suitable and useful for banks, is that it is the model of the Third Basel Accord, because it includes a lot more details in the sense of forming both the current assets and the current liabilities, which is to say, it includes a lot more positions of the actual balance sheet, as well as all the significant positions of the out-balance records, which can be easily transformed into bank obligations (protests of issued guarantees, etc.). It is probable that some of the banks in Bosnia and Herzegovina will not be able to meet the new requirement for the necessary liquidity level, and that those banks which will not be able to fulfill the aforementioned conditions will have to seek other solutions in order to be able to both formally and essentially meet the requirements for the necessary liquidity level. Actually, what a majority of banks have to do is to increase their capital, which will create conditions for increasing deposits, which, in turn, will enable them to achieve a satisfactory liquidity coverage ratio. Why is that so? “Because capital is the measuring standard for each further total growth of a bank’s property and all future positive results with regard to income, gain and overall welfare. In fact, the adequacy rate of capital is that standard, or the indicator telling banks what to do and at what particular moment they need to do it. Major and large banks in Bosnia and Herzegovina today need capital because their adequacy capital rates are low (close to 12%), and if the economic crisis, which is evident, especially in these areas, continues, the classification of banks’ assets will keep worsening, as will the financial results, which is to say, there will be losses which many banks will not be able to cover with the results of the current year. The losses will be offset at the expense of a bank’s capital, which will, as a result, reduce and diminish its participation in the risk assets to the level which will not satisfy the standards set by the regulations provided by the regulatory organs. The total assets of the banks in Bosnia and Herzegovina have been at the same stagnant level over the last few years. By Balkan standards, it is low; by European standards, it is even more so. Therefore, the banking system’s assets have to be increased in every way possible” (Šalić, 2012, pp. 50-62).

7 CONCLUSION

In attempting to absorb the shock waves produced by financial and economic stresses, the new banking standards require a greater amount of and higher-quality capital, as well as better and higher-quality liquidity risk coverage. The new standards in capital and liquidity measurement are much more detailed than the existing ones, because they deal with more balance and out-balance positions of banks, despite being primarily intended for major banks. The banking system of Bosnia and Herzegovina does not have major banks, and is lags behind when it comes to the implementation of these standards, but that does not mean that it should not implement them. However, first the standards of the Second Basel Accord need to be adopted and implemented, because the new standards stem directly from those. Our research has shown that the majority of banks in Bosnia and Herzegovina will be able to fit into the new framework, but also that small banks, as well as those with a low capital level, will not be able to fulfill any of the given requirements for those standards unless they improve, which is to say, unless they improve their operating level in every way possible.

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Received for publication: 25.11.2013
Revision received: 19.06.2014
Accepted for publication: 06.07.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Šalić, R. (2014, 07 15). Certain aspects of the capital and liquidity of banks in Bosnia and Herzegovina. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 224-240. doi:10.12709/mest.02.02.02.23

*Style – **Chicago** Fifteenth Edition:*

Šalić, Radomir. 2014. "Certain aspects of the capital and liquidity of banks in Bosnia and Herzegovina." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 224-240. doi:10.12709/mest.02.02.02.23.

*Style – **GOST** Name Sort:*

Šalić Radomir Certain aspects of the capital and liquidity of banks in Bosnia and Herzegovina [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 224-240.

*Style – **Harvard** Anglia:*

Šalić, R., 2014. Certain aspects of the capital and liquidity of banks in Bosnia and Herzegovina. *MEST Journal,* 15 07, 2(2), pp. 224-240.

Style – **ISO 690** Numerical Reference:

Certain aspects of the capital and liquidity of banks in Bosnia and Herzegovina. **Šalić, Radomir.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 224-240.

MEST Journal
DOI 10.12709/mest.02.02.02.24

THE EUROPEAN COMMISSION AND THE MANAGEMENT OF EUROPE: PAST, PRESENT AND FUTURE

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JEL category: **N44, H, H2**

Abstract

The paper covers the foundation, historical development, current situation and future of the European Commission. The management of the European affairs is in many cases in the hands of the Commission and how is composed in the future the organization will have a huge impact in the general management of the EU. The scientific analysis is based on a multidisciplinary approach with emphasis on the political role of the institution as it is starting to play a central role in the European Integration plus the management role of the Commission inside the EU. The future of the EU Commission is a key question for the future of the Union and is addressed by different proposals developed in this article.

Keywords: *European Commission, subsidiarity, co-decision, future reforms, European Union, European Institutions, European Integration, management of the EU*

1 INTRODUCTION

The European Commission is an important institution in the current European Union as it works as the executive branch of the organization. Its main aim is working for the benefit of the whole of Europe without, at least theoretically, any national influence. It makes this institution the center of the possible future European government, and hence, center of the European integration.

The first European Community, the European Coal and Steel Community, had institutions similar to those of the EU but the institutions had different powers and tasks. The High Authority played the role of the Commission, but it had more power than the current institution. According to different theories of European integration, especially neo-functionalism, the integration process needs institutions to protect the integration already done, lead further integration in the right direction, and push for more integration. As Jean Monnet, one of the architects of the institutional framework of European integration, was the first president of the High Authority, he pushed for his way to have a strong institution without influence of the member states, far from the national interest and close to the European idea. The High Authority was by far the strongest institution in the ECSC. The Council, an institution that represented the member states,

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played a minor role. Hence, the common influence through the common institution was higher than the national influence played by the national governments of the member states of the organization. The beginning of the integration was promising for the European Commission.

Nevertheless, during the negotiations for the creation of the EEC and the EURATOM, France wanted to change the model, giving more power to the Council, the representation of the member states and taking away many functions from the previous High Authority or the new European Commission. So instead of being developed further, the model established by the High Authority in the ECSC, suffered a big regression in terms of integration – it made an important step back.

2 THE FIRST STEPS OF THE EUROPEAN COMMISSION

In the beginning of the process France was the leading state inside the European Communities and also a state against Jean Monnet becoming the president of the new Commission, because of his fervent support to European integration - an idea on contrary to president de Gaulle's conception of Europe and France. The French president had problems with Monnet already since the World War II, because of the role of France in the European affairs. He was basically a French nationalist, whereas Monnet was really a strong believer of the European integration. De Gaulle, once in office, moved the headquarters of NATO away from Paris in order to reassert Frances independence from USA in the Cold War, and developed a strong bilateral relation with West Germany outside of the European Communities for increasing political force of France. He played a major role in many important European issues, such as the enlargement to United Kingdom, Ireland and Denmark, that he personally vetoed twice in order to protect the national interest of France, above the common interest of the Union. He was also fundamental for the development of the Common Agricultural Policy, nowadays the main policy of the European Union in terms of budget. France obtains the biggest benefit from this policy in the whole Union as its farming sector gets the highest level of protection.

The ideas of de Gaulle in terms of European integration were clear in two important facts during his involvement in European politics: the Empty Chair crisis and the Fouchet proposal. The empty chair crisis was a consequence of the integration level in the European Communities, approving that the Council would work with qualified majority and dismissing the veto possibilities of any single state. It meant a big share of sovereignty as the majority of the member states could force some state to accept a proposal even if it was against it. De Gaulle stopped it as it could have enabled France to be outvoted in the Council.

The Fouchet proposal tried to change the whole essence of the European Communities from supranational to international organization, from a community based on integration to a new Community composed of a voluntary union of independent states. He also proposed moving the location of the European institutions from Belgium, Luxembourg, and Strasbourg to just one location: Paris, where the new secretariat would work instead of the European Commission - an institution that represented the European level.

The ambition to substitute the Commission with a secretariat was an obvious attack on European integration, substituting the independence of the Commission for national control, mainly French control. Its commitment to the European good made this institution illustrative of what de Gaulle disliked. He attacked the Commission constantly, complaining about not being representative of the European societies it was meant to serve, in other words a dictatorship created by civil servants without any democratic support.

On the other hand, Jean Monnet, the father of Europe had a long term involvement in the European integration. Already in the World War I Monnet developed a multinational navy for the allies based on the idea of sharing. In the WWII he created a plan of common citizenship between France and United Kingdom, as both countries were facing the same enemy, Germany, whom they had to fight together – for Monnet sharing the same duties meant sharing the same rights. As France surrendered very fast to the German troops, the plan did not work. Monnet was also the main contributor to the ECSC, and the main architect of the institutional building of this

Community and president of the High Authority. The ECSC followed his believes that sharing the power will increase the integration between the member states decreasing the possibility of conflicts. Monnet also contributed to the creation of the EURATOM and was all his life involved in the European integration as a force behind most of the important decisions made.

The veto of de Gaulle meant Monnet's withdrawal of the candidature to the presidency of the European Commission and the nomination of Walter Hallstein as the new president. Hallstein was a scholar who had been the head of the German delegation negotiating the Schumann plan and the ECSC. He had a strong personal relation with the German Chancellor, Adenauer, making him a powerful man in terms of politics. He used his influence for developing the European Commission, providing it with respectability and a technocratic approach. His international representation of the Communities in trade negotiations, under the power of the new Commission, gave the European institutions international presence. But the problems about different European issues with France, and especially with de Gaulle, weakened its position. The French Premier used to attack Hallstein calling him an orient monarch sitting in his throne without any touch of reality, without any power, just acting as the premier of a non-existing country, the United States of Europe. Finally, Hallstein withdraw in 1967 (Ocaña, 2003). Nevertheless, his determination and enthusiasm were crucial in speeding up integration, especially in the Common Market, giving shape to the organization and providing it with the main direction, that the further development of the institutions should follow in the future. Hence, the work of Hallstein was crucial, and his influence can still be felt in nowadays European Commission. The current European Commission was shaped during the constant fights of de Gaulle and Monnet, between the French president and Hallstein. And most of the current problems are a direct consequence of this period, overall the lack of democracy and the technocratic essence of the Commission. The impossibility of developing a more political institution because of the opposition of de Gaulle meant the development of a more bureaucratic Commission based on a technocratic approach, as its main function was the development of the rules creating the Common European Market. The Council and the Commission, were just the executive body of the organization without being elected by any democratic election - there was no need to link the Commission with the European people, there was no need to link the Commission with democracy as it was mainly a body formed by civil servants, developing technical common rules in order to achieve a common market in Europe.

The further development of the European Union gave more and more power to the European institutions, specially to the European Parliament and the European Commission, as both bodies represent the European interest, but it all has created a big problem of legitimacy. The Commission is still an institution formed by civil servants with technocratic approach, but its political influence has increased enormously in the past years without increasing its democratic support. It has led to the main problem of the European Commission - its technocratic essence far from the people of Europe without any direct democratic support. The development of the power of the Commission has not been complemented with popular legitimacy, creating a big democratic deficit. (Ramiro Troitiño, 2013)

3 CURRENT ORGANIZATION OF THE EUROPEAN COMMISSION

The European Commission is organized with a presidency, a college of Commissars, and more than 40 Directorates-General (DGs), similar to the ministries of the states as they are organized by different policies. At the moment there are four main groups of DGs: Policy DGs, External relations DGs, General Service DGs, and Internal Service DG, entailing all the policies under the power of the European Commission. The Commission has 27 Commissioners, one from each member state, working together, including the president and 7 vice-presidents. Each Commissar has a specific area of influence, and it can entail one or more DGs. Traditionally some citizens of member countries held portfolios important for their national interest, as France did with Agriculture and Rural development (now in the hands of a Romanian, Dacian Cioloş), or Germany with the Internal Market (now under the

power of a Frenchman, Michel Barnier). But in both areas, most of the civil servants working for the Commission belong to France in Agriculture, and to Germany in the Interior Market, and hence the influence of these two countries over these policies is still very important. The reasons are obvious: the importance of Agriculture for French farmers, as France is the main beneficiary of the CAP, and the importance of Internal Market to Germany as the leading trading country of the Union. It raises the question of the independence of the Commissars and the staff of the Commission. Nowadays, nationals of the bigger countries of the Union acting as Commissars, hold important policies of the Union. And the smaller states hold other policies with less power, less budget, less staff, and less influence in the development of the Union. The current Commission is a good example with a French citizen in charge of the Interior Market - one of the most important fields in European integration; a German responsible of Energy, a priority for the German government nowadays because of its influence in economic productivity; a Brit of foreign Policy and an Italian of Industry, whereas the Commissars from Malta or Cyprus or Bulgaria are in charge of minor policies. It means that the influence of the member states is very important in the composition of the European Commission, and national interest is still an important fact in the designation of the Commissars.

4 ELECTION OF THE MEMBERS OF THE COMMISSION

The Commission is elected in such a way that the influence of the member states is fundamental. The presidents or prime ministers of the member states negotiate among themselves as to who is going to be the president of the Commission. The way that they choose the president is a mystery, without any voting system, without any clear procedure, without any public control, just secret negotiations between the most influential members of the Union. According to the Treaty of Lisbon, the president should be chosen by a qualified majority of the Council, but normally the secret negotiations of the member states have already decided on a candidate for the post, before any candidate is presented. This procedure has been highly criticized by the European Parliament for not being democratic, and not respecting the Treaties, but little has been done to improve this situation. (Parliament, 2012)

Also, the Council should take into consideration the result of the latest European elections, and normally the president should be chosen from the same political family that won the latest elections, in order to implicate the election of the president of the Commission more with the European reality. It could indeed give the Commission a more democratic background.

The presidents of the Commission, who are nationals from France and Germany, have been more influential in European integration, as the German Hallstein or the French Delors, because they have more influence and links to their national governments - the leaders in the European building process. On the other hand, we have presidents from smaller countries: like Barroso from Portugal, who has no strong links with the national governments of the main states of the Union, and hence, his influence and capacity are smaller.

After the president is chosen by the Council, he has to obtain the approval of the European Parliament, and then, collaborating with the council, make up his team of Commissars. Then the whole Commission goes to the European Parliament, which can approve or reject the whole Commission. On different occasions the member states did not nominate very appropriate people to the Commission in terms of professional capacities or nominated people who were under national controversy, so in some sense the Commission became a graveyard of national politicians. This tendency disappeared after the reform that gave the power of appointing the Commission to the Parliament and recent years we have seen how the threat of the Parliament has led to withdrawal of inappropriate candidates, such as the Italian candidate Rocco Buttiglione, who as commissar of Justice, Freedom, and Security, did not hide his negative opinions about homosexuals and women (Holmes, 2004). Finally the Italian government presented another candidate for the post because otherwise the whole Commission would have been rejected by the Parliament.

In short: the way that the president and the commissars are chosen has created a big debate about the democratic grounds of the institution. As the Commission has a big impact in the lives of European citizens, the European people should have some say in the procedure. There are different proposals: European elections for the president of the Commission among them, but it would be difficult, because there are really no European political parties, just political families, and the participation in the European elections is very low compared to national elections. On the other hand, if the elections would be more interesting, with different candidates and different programs for the Commission, Europeans could feel closer to the Union and maybe, participate more. Another possibility is that the president of the Commission could be chosen just among the members of the European Parliament. As the members of it have been chosen by the Europeans, it would have more democratic background than the current system. But that is also unlikely to happen in the short term, because the member states would lose the control they have on the nomination of the president of the Commission now. It would also give more power to the Parliament - another institution that is having problems with democracy and representation of European citizens. The reform is probably far off, but as integration increases and the power of the institutions also grows, getting closer to some sort of European government, the people will want to participate in the election of the president of the Commission; and the second option - to choose a member of the Parliament, will probably work in the medium term.

5 WORKING SYSTEM

The Commission works as a whole, as a group, where all decisions are taken by the whole team of commissars, and hence they as a whole are responsible for the decisions taken. This collegiate system does not mean that there is no debate inside the Commission, or that the commissars always agree on everything, but the debates and dissensions are close to the commissars and the president of the Commission. When they reach an agreement, all the members have to support it. This working system means that the Commission is united for good and for bad, and the whole Commission is responsible for the actions of all its members. Hence, as we have been shown in the procedure to elect the Commission, the European Parliament can only accept or reject the whole team, not parts of it. Also, the Parliament has some control power over the Commission and can dismiss the whole Commission, but never just a commissar, as it happened in the case of mismanagement of funds by the commissar Cresson and the fall of the whole Commission under Santers presidency because of the pressure of the European Parliament. (Health, 2009) As Mario Monti, commissar of the Santer's Commission said "This Commission has collectively resigned, I believe, not because of collective responsibility but because certain members of it preferred not to take their own individual responsibilities." Nowadays the Commission is still working with the same system, but the enlargements have meant more and more commissars, reaching 27 members of the Commission, so it has become difficult to maintain the collegiate system, and currently Barroso has a more presidential style.

The European Commission has its own staff- around 33,000 people working in the different services of the institution. The size of the Commission has often been criticized for the great numbers working there, but if we compare it to the civil servants working in the member states, and the citizens they have to deal with, the European Commission is a really small institution. The 33,000 headed staff of the Commission work for a European population of almost 500 million people (The EU-27 population continues to grow, 2009). France, for example, has more than 2 million civil servants (This number is an estimation of the French civil servants in all the levels of the state, as central, regional, and local institutions. So, it cannot really be compared with the European Commission, as it is just one institution of the Union, even when it is the largest) for a population of 64 million people, (Service-public.fr, the official gateway to the French civil service, 2010) so the size of the Commission is not as high as the critics point out. The criticism originates mainly from the times of the British Premier Thatcher and her beliefs in reduction of the size of the state and trust in the market as a regulator of economic agents, hence in the citizens. Thatcher did indeed reduce

the numbers of civil servants in the local and regional institutions of the UK, but in the central government she increased them, and in her battle with European integration, she also wanted to decrease the influence and the numbers of the European Commission. Traditionally these critics have come from British soil.

The services of the Commission with highest numbers of civil servants are the DGs of Development Aid (12%), the Join Research Center (8.3%), and the translation service (7.3%); and the services with the fewest people working there are the BEPA or policy advisers (0.1%), the JAS (0.3%), and CLIMA (0.4%). About the internal composition of the Commission, it is remarkable that there are more women (54.5%) than men (45.5%) working there, so there are no major gender equality problems. The countries with the most nationals working in the European Commission are Belgium (18.3%), Italy (11.1%), and France (10.2%); the geographical localization of the Commission with its main center in Brussels explains the high number of Belgian citizens working in the Commission and the high number of French and Italians is explained by the size of both countries. Anyway, here the surprise is the comparatively low number of Germans working for the Commission (6.9%) because Germany is by far the most populous country of the Union. Also the UK presents a low rate compared with its population (4%). The countries with the lowest presence in the Commission are Cyprus (0.4%), Malta (0.5%), and Estonia (0.6%) – in a normal accordance to the size and the population of these states. (Staff figures, 2013)

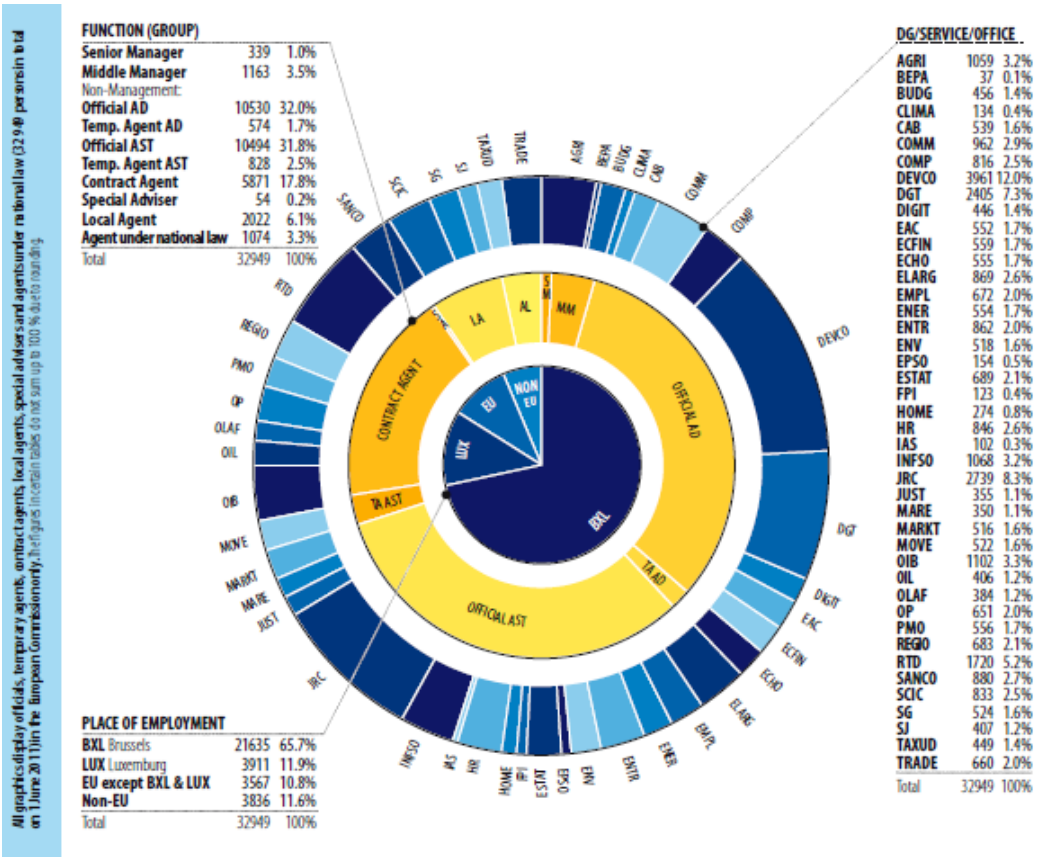


Fig. 1 The European Commission staff numbers

Source: European Commission (Staff figures, 2013)

6 LOCATION OF THE COMMISSION

Originally the High Authority was located in Luxembourg, but the concerns about new European institutions and the impact of the civil servants of the Commission in the reduced population of the country led to choosing a new location for the European Commission. Belgium, because of its central location and because of the multinational composition of the country, was

selected to be the new headquarters of the new institutions. The primary development of the Commission centralized most of its services to Brussels, with the exception of the ECSC, which is still located in Luxembourg. The location in Brussels has created some problems, because the EU was accused of imitating the most centralized states. The offices of the president of the Commission are located and the weekly meetings of the whole Commission held also in Brussels. This critique of centralizing plus the development of the new technologies that improve the communications so much are leading to the establishment of services of the Commission in other locations, such as Spain, Denmark or Finland. Also, the external services of the Commission and its representation in other states accounts for a big share in the European Commission. So, the workers of the Commission are located in Brussels (65.7%), Luxembourg (11.9%), other member states (10.8%) and territories outside the Union (11.6%).

7 THE POWERS OF THE EUROPEAN COMMISSION

The powers of the Commission are mainly executive power, legislative initiative, and enforcement of legislation. Executive power is shared between the Commission and the Council. Until the Treaty of Lisbon executive power was in the hands of the Council, and this institution delegated it to the Commission. It was a clear movement from the member states controlling the Commission, because in case of any big clash between both institutions - one representing the interest of the member states and the other representing the interest of Europe - the Council could withdraw this power from the Commission. It never happened, but it was an option for enforcing the position of the Council. After the Treaty of Lisbon the Commission holds executive power by itself as it is in the treaties, but not all executive power: the Council still holds the executive power in such important areas as Foreign Policy or the executive power of the common currency in the hands of the European Central Bank. The executive power of the Commission is more restricted than most national executives, but it is very important on the European level, equating the Commission with some kind of government of Europe.

The legislative initiative is one of the most important powers of the Commission. It means that this institution is the only one that can initiate legislation in the Union. The procedure starts with the consultation of the Commission with different groups of independent experts, and the debate and reform of this legislation in the different services of the Commission related to the field, until final approval by the college of commissars. Then the proposal is no longer under the influence of the Commission and goes to the Council and the Parliament to be approved, including amendments to the original proposal of the Commission. However, at the early stages of the process the Commission can withdraw its proposition for new legislation if the Council and the Parliament completely change the spirit of the proposal.

The main reason to give this power to the Commission is based on the neo-functionalist theory of European integration, where an independent institution is needed in order to push the integration in the right direction without the influence of the member states. The power of legislative initiative of the Commission will lead integration according to the European interest, and hence without the influence of national groups. Nevertheless, the Council and the Parliament can ask the Commission to start the legislative process on anything they consider necessary, and the Commission can refuse, but normally always accepts. European citizens (at least one million) also can ask the Commission to draft new legislation, but the petition is not binding. There are some fields where the Commission does not have the power of initiating legislation - as with the Common and Security Policy, where the member states reserve this power for themselves.

Finally, there have been critics of this monopoly of the Commission because of the poor democratic record of the institution, as it is elected by the Council and the Parliament without any link with European citizens. The Parliament would also like to have this power, or at least share it with the Commission. Besides that, the Commission also initiates the procedure of creating the new budget

of the European Union each year. As with the rest of the legislation, the draft of the budget created by the Commission is transformed by different amendments introduced by the Council and the Parliament.

Among the more notable powers of the Commission is controlling the good implementation of European legislation in the member states of the Union, also the Commission is in charge of implementing the European budget. Normally the Commission uses the institutions of the member states to control that the implementation is correct, but it also uses some of its own agencies. It is important to remark that the Commission does not have the right of punishing - according to the Commission itself this is bad implementation of European legislation. Usually the Commission tries to point out a deficiency to a member state, and after that the anomaly is solved. If the state does not share the opinion of the Commission and does not apply any change to the observations, the European Commission cannot sanction the state, but can send the case to the High Court of Justice, the institution that will decide and sanction, if such action is relevant. The European Commission acts as the Guardian of the Treaties (Garcia, 2000).

The Commission also has other and different powers besides these three main ones, highlighting the international representation of the Union in world trade organizations, as trade policy depends on the Commission, because it has influence on the European level, surpassing the national sphere.

8 MAIN PRESIDENTS OF THE EUROPEAN COMMISSION

The most important presidents of the European Commission have been Hallstein, Delors, and Santer. As the president of the Commission sets the agenda of the institution and his personal influence is broad, the personality and the attitude of the president are very important for the achievements of the organization. Hallstein developed the organization, while Delors gave a big impulse to European Integration, adding dynamism and giving the Community a sense of direction, pushing for more integration in the Single Market and the creation of the monetary Union. Santer is the most negative figure because his Commission had to step down due to financial mismanagement. The current president of the Commission, Barroso, is a minor character in European integration as his actions are mild and the institution has lost presence in leading the European building process.

9 CONCLUSIONS

The European Commission has been criticized as the European citizens see the Commission as something alien, something located far away in Brussels without being in touch with the reality of citizens, having huge salaries. The Commission is trying to solve this problem with more transparency in the working system of the Commission and with active press action to bring the institution closer to European citizens, but it will not work unless there is a direct link between the European citizens and the European Commission. To create that link there are different possibilities – the most obvious of them a direct election of the Commission in European democratic elections.

Also, Commissions role to push for deeper integration is seen as an attack on the national states and the liberties of citizens, for example Commissions support to enlargement to Turkey, when many European citizens are against it, or at least wanting to have a say on the issue. The Commission is always going to push for deeper integration, because it is one of its most important roles in the architectural framework of the European building process. It is its duty, and sometimes this approach does not match with the wishes of the European people or the member states, more prudent in terms of integration. In reality there are other institutions in the European Union to avoid a dictatorship of the Commission, the rule of technocrats. These institutions deal with the problem of who has stronger links with the European people: the European Parliament via the European elections, or the Council, via national elections where the national governments are chosen (Brown, 2011). So it is basic to keep a balance of power between the different European institutions in order to preserve the integration process in track.

In the current economic crisis the European Commission is trying to increase its role in the European affairs, increasing highly the euro skepticism among Europeans. The members of the Commission criticize some policies of the member states and propose reforms to the national governments, but they do not have any democratic power and hence their position is not understood by the people of Europe. The Greek, Spanish, Italian, Irish or Portuguese population cannot understand how the country has to follow the proposals of the Commission when this institution is mainly a technocratic body of civil servants who earn thousands of euro a month and are living in a European bubble without any contact with the reality and necessities of the people. Again the lack of democratic background of the Commission is its biggest enemy.

The future of the Commission will be linked with the speed of integration in Europe. As currently it seems that the priorities are focused on the common currency and the possibility of creating an economic government in the Union, it seems unlikely that the Commission will be in charge. The most feasible solution would be the creation of an economic government under the umbrella of the Council, and hence total control of the members of the Euro zone. Then the duality of two executive bodies, the Commission and the Council, would be reaffirmed and developed. This, plus the attitude of the Council, which seems unwilling to yield the power of the Common Foreign and Security Policy to the Commission, would confirm this duality in the Union. The Commission, nevertheless, will try to influence the process and share some of the power of the Council as the democratic background of the Commission grows and its relation with European citizens increases. The next wave of integration is likely to deepen the role of the Commission as more policies will be included in the sphere of influence of this institution.

The future of the European Commission is also linked with the other most powerful European institution, the European Parliament, as the latter is the representation of the political will of the European people through the European elections. As the political role of the EP will increase, its democratic link with the European people will become stronger trough the creation of European political parties and the most likely political link with the European Commission. In order to give a saying to the European people in the Commission election and to increase the interest of the European people in the European elections to the European Parliament, it is most likely that the future European Commission leaders, the President and the Commissars will be elected between the democratically elected members of the European Parliament. It would be a very important step in the creation of the European State and the European government, so the political enemies of this option are numerous and powerful, but so will be the challenges of the European Union which will probably be solved following the spillover effect of the Neofunctionalism. Further integration creates benefits, but new problems as well. These can be overcome just with deeper integration. According to this model, there will be a moment where deeper integration will be a necessity and the actors involved in the process will have to decide between the collapse of the organization or deeper integration, more power with democratic support to the European Commission or the end of the European Union.

The path is long and full of formidable obstacles, but the options are reduced as the integration increases and the individual measures of the member states have not effectiveness to solve the problems of their citizens. So Europe becomes the most likely option to manage the problems of the European societies in common.

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Received for publication: 19.01.2014
Revision received: 18.03.2014
Accepted for publication: 03.06.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Troitino, D. R. (2014, 07 15). The European Commission and the management of Europe: past, present and future. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 241-250. doi:10.12709/mest.02.02.02.24

*Style – **Chicago** Fifteenth Edition:*

Troitino, David Ramiro. 2014. "The European Commission and the management of Europe: past, present and future." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 241-250. doi:10.12709/mest.02.02.02.24.

*Style – **GOST** Name Sort:*

Troitino David Ramiro The European Commission and the management of Europe: past, present and future [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 241-250.

*Style – **Harvard** Anglia:*

Troitino, D. R., 2014. The European Commission and the management of Europe: past, present and future. *MEST Journal,* 15 07, 2(2), pp. 241-250.

Style – **ISO 690** Numerical Reference:

The European Commission and the management of Europe: past, present and future. **Troitino, David Ramiro.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 241-250.

MEST Journal
DOI 10.12709/mest.02.02.02.25

IMPLEMENTATION OF THE METHOD OF PROBLEM-BASED LEARNING AT AKAKI TSERETELI STATE UNIVERSITY

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JEL category: **D83, I2, I23**

Abstract

The global processes of the modern society dictate new approaches in modern education. Therefore, an education system are made very high demands: it has to prepare the specialists for life and work activity in the quickly changing world, where the person performs non-standard tasks constantly. Use of various new techniques improves the process of studying, teaches the student to think and really to use their knowledge gained at the lectures. In this article we will consider a method of "Problem Based Learning" which promotes deeper understanding of the studied material and application of the gained knowledge in practice. Akaki Tsereteli State University takes an active position in implementation of the modern educational technologies, including the problem-based learning. Now within the university education this method is used at the individual level. New practice is in a traditional framework of the existing educational system, it treats the activity of each individual teacher and so it is very private. At this level changes don't have great influence on the University. In fact, they are carried out so that anybody doesn't know about it, except the involved teacher. The method allows not only to form and fix skills of knowledge acquisition, but also to learn specifics of work in team.

Keywords: *problem-based learning, education, system approach, education, knowledge*

1 INTRODUCTION

The global processes of the modern society dictate new approaches to modern education. Therefore, an education system is to meet high demands: it has to prepare the specialists for life and work activity in the quickly changing world, where a person performs non-standard tasks constantly. We live in the modern quickly changing world, where the competition becomes more and more strong every day, and so lack of practical experience and skills of the students can become a serious and essential obstacle on the way to their employment and career growth. In this regard, the increasing popularity is gained by the modern techniques of studying, directed on the

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development the certain practical skills of the students. The correct combination of traditional and innovative methods of studying help students to acquire not only theoretical knowledge (they often have non-systemic, different character), but also promote the development of the practical professional skills.

Use of various new techniques improves the process of studying, teaches the student to think and really to use their knowledge gained at the lectures. In this article we will consider a method of PBL (Problem Based Learning) which promotes deeper understanding of the studied material and application of the gained knowledge in practice. (Hannafin, Land, & Oliver, 1999)

2 PROBLEM-BASED LEARNING – AS THE SUCCESSFUL INNOVATIVE METHOD OF STUDYING

The method PBL is widespread in Europe and America. It took more than 20 years to create the corresponding techniques and the necessary materials. The real embodiment of PBL – inclusion in the university programs - began since the 90s of the 20th century. This method is successfully used in the medical education. Today more than 80 percent of the medical schools and universities of Great Britain, USA, Canada and Australia apply methodology of problem-based learning. It allows students to adapt quickly on real environment through creation of the hypothetical and virtual situations. (Levin, 2001).

Though initially PBL was introduced as a method of studying of the medical students, it got the great application in other educational programs and today it is considered as the successful innovative method of studying which is based on independent work of the student. In this method the accent of studying is displaced from the teacher to the student, so now the student plays more active role, trying to solve the practical task. This method has had the attraction of making pedagogical sense – it holds out the hope of fostering the application and integration of knowledge, building on previous understanding, and relevance to future professional activities.

While doing PBL students complete a task rather than looking at a specific area of a subject. By completing a task, learners are practicing a range of topic and are learning what they need and when they need. Students work together to prepare their work which they present to the whole class. Teacher needs to provide them with all necessary information to help them work independently and implement their theoretical knowledge into practice.

The different countries and universities have their own specifics of the organization and methodical ensuring for the similar lessons. At the same time there are also some basic general principles: creations of the cases integrated into the educational program, a role and a place of the teacher, the purposes and the tasks of the students, number of the students in a group, the grading system, and the equipment of the classrooms. The main difference of PBL from the traditional methods of studying in small groups is the organization of the lessons (Hallinger, 2005), so the students have to formulate the questions necessary for the solution of cases themselves and then find the appropriate answers to these questions during the process of the search of the relevant information and joint discussion (Simons, Klein, & Brush, 2004). One thing that does stand out is the enthusiasm of faculty and students however. A small minority of students found the PBL process difficult and given the choice would prefer another learning method. A few tutors prefer to modify tutorials into a seminar format which may be more familiar and comfortable for them. But the majority of students and tutors find that the PBL process is vastly more engaging and stimulating than traditional formats.

The steps of Problem Based Learning often overlap each other.

1. **Identify the problem**

   The students read about the problem and discuss it. They can say “diagnosis” right away, but need to be encouraged to think more deeply about all the “why, how, when”. (Hallinger, 2005)

2. **Explore pre-existing knowledge**

   Clarifying terms and the meaning of terms used in the problem is a good way to start this step, before going on to a more in depth exploration. Students come with an existing knowledge base and many life experiences. We know that people retain newly acquired knowledge more easily when they already

know something about it – and this second step allows students to consciously access their own prior understanding and begin to apply it for their own benefit and that of others in the group. Tutors need to ensure that all students participate in this step, and to help the group consider critically the information that is brought forward by its members.

3. **Generate hypotheses and possible mechanisms**

   Based on the previous discussion, students generate their different hypotheses about the problem, including possible mechanisms. It is important for the tutor to help them from falling into the trap of jumping to diagnosis and superficial assessment of the clinical aspects of the problem. The goal is to have the students focus on understanding the key concepts which are illustrated by each problem, and this requires that they are deeper into it. The tutor will ensure that all students are engaged in the process of discussion.

4. **Identify learning issues**

   Leaning objectives (LOB) may be defined as questions that cannot be answered with current knowledge in the group. At this point, it will have become clear to students what their learning issues are, both as a group and as individuals. These questions will be the basis of the students' search for resources and information, and much frustration can be avoided if they are well formatted and clear. At the end of the problem, the students will need to identify and understand the important concepts contained in the problem, and this should be reflected in the identified issues.

5. **Self-study**

   Students have a set amount of time for self-study before returning to the next tutorial. It is clear that the educational program design builds in time for this crucial step in the process, and not over schedule the students.

6. **Re-evaluations and application of new knowledge to the problem**

   This step of PBL process occurs when the group reconvenes, having spent time learning about the issues identified earlier. It is at this time that the new knowledge and understanding is applied to the original problem, and the tutor is handed the challenge of ensuring that the students are actively engaged and working with their new knowledge. Educational research, as well as common sense suggests that working with new information, questioning it, and applying it to different situations helps stimulate recall for the future. It is important it avoid a series of "mini-lectures" - from each student (or the tutor). Tutors may also stimulate the students ~learning by posing questions which challenge them to apply these concepts in slightly different contexts.

7. **Assessment on learning**

   Before the Health care Problem and the tutorial can be considered complete, it is important that each student and the group have an opportunity to reflect on the process of learning that has taken place. This includes a review of the learning achieved, but also a chance for group members to give each other feedback about contributions to learning and group process, and an evaluation of how the is working together.

Research suggests that effective use of problem-based learning methods can prepare students to be flexible thinkers who can work productively with others to solve problems (Hmelo-Silver, 2004). Moreover, the PBL method has been demonstrated to increase different types of problem-solving skills in students, from describing specific processes needed to address a particular problem, to increasing the depth and breadth of solutions (Dochy, Segers, Van de Bossche, & Gijbels, 2003). Research also suggests that PBL can help students develop self-directed learning skills and positive attitudes toward learning.

Despite evidence that PBL is a powerful approach, adoption of this method is not as widespread as might be hoped. Like other innovations, PBL poses numerous difficulties for both teachers and students.

Some studies with medical students reflected the same kind of student difficulty in applying knowledge. He observed that medical students often used basic science knowledge incorrectly or not at all in formulating and revising clinical

diagnoses. When these students became practicing clinicians, some of them rarely knew how to apply learned theoretical knowledge to novel clinical situations.

One prominent explanation to account for this type of student behavior stems from the different views of knowledge and the ways of teaching. In the traditional perspective, declarative knowledge, which refers to content knowledge accrued from research, is taught separately from practice to students in lectures. This perspective on teaching and learning emphasizes the passive nature of the mind where students accumulate knowledge provided by the teacher. Thus, knowledge is detached from the actual real life context, and learners may find it difficult to apply it to novel problem situations.

The aim of education is to get students to develop the functioning knowledge which allows them to integrate academic knowledge base (declarative knowledge), skills required for that profession (procedural knowledge) and the context for using them to solve problems (conditional knowledge). In order to acquire this integration to achieve the aim of education, the traditional way of teaching and learning has to be put aside. Problem-Based Learning (PBL) by its sole nature requires a different way of using knowledge to solve problems. The development of this functioning knowledge is the aim of education in general, and higher education in particular.

The positive effect of PBL on student learning has been well documented, but the weakest link appears to be the assessment methods Teaching and learning operate within a system consisting of the three central components of course objectives, teaching and assessment (Hmelo-Silver, 2004). To facilitate desirable learning outcomes, these three components have to be appropriately aligned. In relation to this, there has been a growing volume of literature looking into the effect of inappropriate assessment on learning in PBL-based courses. When PBL was implemented within a traditional assessment system, most students felt insecure with the PBL approach. The examination results were poor and the course evaluation questionnaire indicated quite a low score on most of the items. On the other hand, if assessment is constructively aligned with the aims and philosophy of PBL, quite a different picture emerged. Findings of this study indicate that students in the PBL class scored higher in the portfolio component of than the non-portfolio component, and the different approaches students used in preparing portfolios were aligned with the aims of PBL (Brinkerhoff & Glazewski, 2004).

3 EXPERIENCE WITH AN IMPLEMENTATION OF THE METHOD OF PBL AT ATSU

Today universities in Georgia conduct researches as a result of which educational changes are initiated to conform to requirements of modern economy and society. These changes cause the development not only professional, but also the personal skills of the students, first of all their ability to the independent studying, including life-long learning.

Akaki Tsereteli State University takes an active part in implementation of the modern educational techniques including the problem-based learning. Now within the university educational system this method is used at the individual level. New practice has become a part of a traditional framework of the existing system dealt by teachers individually (Kolodner et al., 2003). At this level changes don't have great influence on the University. In fact, they are carried out so that not everybody knows about it, except the involved teacher.

The following level is systemic. This level is characterized by changes in the course or the program, so this means – changes in the teaching and studying methods and in the systems of the grading. The changes don't happen entirely. For the purpose of successful implementation of the innovative methods of studying in the university were developed the special training courses for the teachers. At this moment the new educational program based on the PBL method is created on the basis of the faculty of health care of the university. This program is created as a part of the research project entitle "Establishment of the Supra-Regional Network of the National Centers in Medical Education, focused on PBL (Problem-Based Learning) and Virtual Patients" funded by the European Commission through the Tempus program. (Tempus, 2014) This program includes the specialized computer program for the students, allowing to imitate appropriate clinical

situation and essentially to increase efficiency of PBL.

The last and highest level is the institutional level. At this level influence on the organization, and also on the students, on the teachers is absolute. It can be described by the following characteristics:

- Students take active part in educational process;
- Studying is cross-disciplinary (interdisciplinary);
- There are changes in the organization and organizational culture;
- There are changes in a format of carrying out examination (control);
- There are changes in methods and the assessment purposes.

At this level the university changes the existing approaches to teaching and management. It is impossible to reach this situation by means of executive decision in very short period, and therefore, implementation of the program takes years.

Achievement of the institutional level is one of the priority directions of the strategic development of the university now.

In our opinion, one of the main advantages PBL is the high motivation of the students to getting new knowledge during such educational process.

The Akaki Tsereteli State University (Georgia) has a teaching development grant to promote and support PBL in health-science curricula. As a result, a PBL team of university consisting of academic staff was formed in 2013. Under the management and coordination of this team, research funding to develop and implement PBL in their respective curricula. To evaluate the effectiveness of PBL implementation, two projects focusing on student learning and faculty perceptions were operated by the PBL consortium team. This paper reports the findings of the latter project on faculty perceptions.

The questionnaire consisted of a demographic section which aimed to identify the culture of institutions (PBL or non-PBL), the academic rank, and the teaching and PBL experience of the respondents. Findings from this section indicated that there were approximately equal numbers of respondents from PBL and non-PBL institutions. Of these participants, about 40% were at the rank of senior lecturers or above, and the rest were lecturers/Assistant Professors. 30% of the respondents had a tertiary teaching experience of over 5 years but only 10% of them had experience with PBL.

In order to analyze the questionnaire data from the various perspectives, the demographic data set was used to stratify the respondents into different groups: academic rank of the respondents, and their experience with PBL.

The differential analysis of the results of the questionnaire indicates that there are four factors affecting the implementation of PBL in institutions. These factors are, namely, resource, quality assurance, student factor and teaching conception of faculty members. Analysis shows that PBL and non-PBL based institutions differ mainly in the type of support provided for the PBL innovation, namely, full continuous departmental support in the former, and ad hoc research funding support in the latter. In terms of the difference of viewpoints between faculty members of different academic ranking, the senior lecturer group indicated that the teaching conception and quality assurance evaluation system affected the implementation of PBL, whilst the lecturer group indicated that the external student factor played an important role in the successful implementation of PBL. Irrespective of the experience of PBL tutors, all agreed that the quality assurance evaluation mechanism, student factor and teaching belief played an important part in PBL implementation (Lehman, Ertmer, Keck, & Steele, 2001).

However, those faculty members with less experience in PBL found it quite difficult to take up the PBL teaching approach and they believed that it was impossible to run PBL as an individual course. To sum up, the questionnaire, which was designed from the themes emerged from the interviews conducted in the early phase of this study, confirmed that student factor, teaching conception, and qualitative assurance and/or resource support were the basic hurdles affecting PBL implementation.

The method allows not only to form and fix skills of knowledge acquisition, but also to learn specifics of work in team. Important advantage of PBL is development of abilities of the orientation in interdisciplinary situations and ability to find and

process a necessary material by means of use of various information sources (lectures, textbooks, dictionaries and reference books, Internet sources and others).

Because the volume of direct instructions at PBL is minimized, students assume the big responsibility for own studying. It is considered that exactly it, and also studying in a context of a real situation allows them to acquire better a material and to make competent and right decisions.

4 CONCLUSIONS

The European Union pays today considerable attention to development of this direction. In this article is considered the experience of the realization of PBL based on system approach of the foreign universities. Advantages of this approach in the studying process of bachelors and masters in higher education institutions are shown. Use of these technologies allows forming both professional and personal competences of graduates of educational programs. The analysis allows predicting more widespread introduction of these technologies of studying in higher education institutions of Georgia.

Thus, PBL is the methodology of teaching based on special pedagogical strategy. The method allows to acquire materials through understanding of real life situations that provides full development of materials by students by means of collecting and studying necessary (individual for everyone) information and to create possibilities to develop the skills of team work and concrete decision making.

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Received for publication: 31.01.2014
Revision received: 12.04.2014
Accepted for publication: 03.06.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Valishvili, T., & Valishvili, T. (2014, 07 15). Implementation of the method of problem-based learning at Akaki Tsereteli State University. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 251-257. doi:10.12709/mest.02.02.02.25

*Style – **Chicago** Fifteenth Edition:*

Valishvili, Tamara, and Tea Valishvili. 2014. "Implementation of the method of problem-based learning at Akaki Tsereteli State University." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 251-257. doi:10.12709/mest.02.02.02.25.

*Style – **GOST** Name Sort:*

Valishvili Tamara and Valishvili Tea Implementation of the method of problem-based learning at Akaki Tsereteli State University [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 251-257.

*Style – **Harvard** Anglia:*

Valishvili, T. & Valishvili, T., 2014. Implementation of the method of problem-based learning at Akaki Tsereteli State University. *MEST Journal,* 15 07, 2(2), pp. 251-257.

Style – **ISO 690** Numerical Reference:

Implementation of the method of problem-based learning at Akaki Tsereteli State University. **Valishvili, Tamara and Valishvili, Tea.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 251-257.

MEST Journal
DOI 10.12709/mest.02.02.02.26

CHANGE MANAGEMENT THROUGH IMPROVEMENT OF THE PRODUCTION STRUCTURE OF TRANSPORT - NEW CHALLENGES

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JEL category: **L9, R4, R41**

Abstract

The problem of the study, design and the improvement of the structures is not a new theory. In this area employs a large number of scientists, there are many scientific studies and developments. However, the current dynamics in changes of new scientific results and greater needs of the economy has made it necessary to expand the scope of research. This is particularly important for transport of the effectiveness of which depends largely on the overall economy.

The actuality of the problem is especially great given the following important issues that need to be addressed:

- *The construction of the structures of the transport system is directly dependent on the structure of the national economy.*
- *In turn, the structure of the transport directly affects territorial and product restructuring of the economy.*

Keywords: *transport, restructuring, production structure, cybernetic system, structural units of transport, effectiveness, structural factor, elements of the system, transport modes, common transport system*

1 INTRODUCTION

Restructuring of the economic system is highly topical scientific and practical problem in terms of economic reforms. Criteria and factors for research and analysis of production structures and especially to the procedures for design and management of these processes are relatively less explored area. Here we present an attempt at a new approach to managing changes. The proposed approach to integrate the capabilities of cybernetics and systems approaches.

This concept was fundamentally new and allows for a comprehensive analysis of the problem structure and the design of effective production structures taking into account the complex of

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relations between different sectors of the economy in hierarchical and horizontal plan.

The proposed methodology can be successfully adapted to different economic systems.

The problem for the study and improvement of the structures and economic systems is essential for their effective functioning. The task for a new approach to the restructuring can be decided only on the basis of complex systems research. It is impossible to solve correctly the structural problems of the economy, if not used modern scientific achievements of the theory of systems and their management. On this basis it is possible the development and use of modern approaches and methods of research and analysis of the structures, and the right choice of alternatives for their development and application of appropriate technology for practical transition to the new structures.

Past experience shows that restructuring is most often limited to modifications of existing structures based primarily on intuition or partial studies. This is the reason for allowing conceptual errors with serious negative consequences.

The output of the production structure as an object of study and improvement was required for it to be considered as a separate system object and its elements. Basic position for evaluating the effectiveness of the production structure is its consideration as a cybernetic system with the corresponding input and output. Parameters input can be described as a relatively independent system with the own structure of its elements.

The need for a scientific approach to the improvement of the structure is particularly topical for the transport system.

Transport is one of the main sectors of the economy. This is determined by its particular role in the overall reproduction process, along with that it is a basic condition for the production of material goods.

For transport as a system and its place can draw conclusions based on the following important information:

- Production resources of transport are about 15% of the whole economy, and the share of investment exceeds 8%. These data indicate not only the scale of transport as a system, but also its significance for the whole economy. Violation of transport processes and relationships can have negative consequences for other sectors. The role that transport has on the effectiveness of the national economic complex and the overall social and cultural life requires it to investigate so as to cover all processes and relationships that are directly related to its functioning. On the other hand the structure of the transport complex is most closely correspond to the structures and the respective needs of freight and passengers according to their structure, spatial location, dynamics of rise and fall over time.
- Production and structural units of the transport system is characterized by a wide variety of functions, objectives and technological processes. They have separate dynamic performance and other characteristics of the processes for preparation of the final product. Along with this activity is directed to of a unified goal - to provide the transport process.

This objective can only be achieved by not less complex system of united technological and managerial procedures and integrated system for the implementation of information, technological, resource, organizational, economic and social relationships where the single technological process requires an extremely coherent system of these links requires a high degree of organization in carrying out the integration relationships.

2 INTEGRATION OF TRANSPORT MODES IN A COMMON TRANSPORT SYSTEM

In building integrated functionally, organizationally and technologically complementary production structures, transport should be considered as:

First: As a single cybernetic system, where the entrance is the impact of the environment and the output results of the system as a whole. It is well known classic scheme, but the problem is that too often stop its adoption and unfortunately arbitrary interpretation. Evaluation of the effectiveness of the system is usually done by comparison with other systems and their parameters of input and output. This information is incomplete and in most cases leads to conceptual errors that cost billions.

Therefore should be assessed real environment directly connected to the research element of the system, in this case the production structure. The structure of the common transport system parameters of the production structure elements / modes / are treated as external environment.

The following procedure is the consideration of each mode as a separate cyber system with the external transport environment, the impact of other modes of transport and structural elements of the mode of transport.

This approach is repeated until a hierarchical level that is high enough weight factor influencing all the structural elements of the transport system. For example, the proposed approach container terminals are systems of fifth order in the system hierarchy of the production structure of transport. But their consideration as a separate system is necessary because they have a structure important matter for all modes.

Determining here are single transport industrial and technological relations. Without their real metering and optimization is impossible to make a real feature of the system-wide transport. Coordination of characteristics of the subsystem is mainly through optimization of these links in a three-dimensional direction - both hierarchical and horizontal directions.

Second: In contrast to industry, transport the major part of the funds constantly change position. Diversity of relationships with the external environment and the dynamics require adequate speed of reaction, while there is great uncertainty, requiring a high level of adaptability. Flexibility is creativity, greater knowledge of the general laws of the transport process, flexible information system „lightning " movement and implementation of management decisions and feedback to and from all parts of the system with two words, less flexible , adaptive , dynamic and highly efficient structures. These requirements apply to all dynamic systems, but most transport.

Third and very important feature of the system is its humanity and all the attendant requirements to employees. In transport workers and employees working in around 560 different types of jobs with different levels of qualification. These figures show that the management of human potential itself as a system is very complex task and requires special attention and detailed analysis.

3 FUNDAMENTAL STRUCTURAL UNITS OF THE TRANSPORT SYSTEM

Above described general system characteristics of transport are the basis for the complexity of the structure as an object of study. Full description of the structural units of transport is impossible within this development. For this reason, we will point out only the main components of the "production" structure. Structure elements of the functional structure of transport characterizing the output of the transport system in two main areas - transport of passengers and freight are:

- Rail transport
- Road transport
- River Transport.
- Sea Transport
- Air Transport
- Pipeline transportation
- Urban Transport
- cabin lift
- Other modes of transport and logistics

Comprehensive solution to the structural problems of transport requires restructuring of all the modes of transport and activities taking account of the proportions between them and the proportions between transport and other sectors. This condition is necessary in order to obtain maximum benefit from the operation of transport in general. To evaluate the effectiveness of the structures of transport need to be analyzed and a number of quality characteristics in the development of modern transport and on this basis to determine the baseline.

Modern transport development strengthens its role as an essential tool for the effective functioning of the whole economy as a major balancing factor between sectors and territories of individual countries as an important factor in solving the social, cultural, infrastructural problems and intensification. This crucial role of transport determines the main directions of its development in recent years in the following areas:

- Update technologically and structurally. Here the focus is primarily on the priority inserting

and cutting-edge technologies and the development of economical modes of transport.

- Improving the quality of transport services. Increasing the transport speeds, specialization, the development of combined transport, reducing the stock of materials for the time only about their transportation without downtime.

4 RESEARCH AND PRACTICAL TASKS IN RESTRUCTURING

Problems can be solved after the development and adoption of a unified science-based concept and technology development projects and restructuring of transport. Decisive tasks now do not include any specified task that is associated with the restructuring of transport. Indication of such problems is to rely permanently on the old approach, the results of which show that can be achieved only general disclosure of the problem situation and outlining the guidelines. The main factors that influence in this direction are:

- All too often, the market as "automatic controller" as absolute as a major structural factor. This is especially dangerous for transport because on the one hand to the need for a comprehensive, scientifically and strategically well-balanced structural policy and the other - not the specific characteristics.
- The old approach has exhausted its possibilities and therefore more complicating structures of the transport system and the complexity of technological processes and relationships. This implies the depth of research and discovery of the whole complex of relations, processes and relationships underlying effective performance as a whole. Restructuring of each subsystem of transport should be considered and agreed by the iterative procedure with the other structures. Their organizational, technological, economic and functional integration is the basis for the formulation of a "framework" in which the construction of each business unit will have optimal parameters and effective functioning of the public scale.

All this cannot be solved with existing tools and scientific and practical methods. We need a fundamentally new scientific approach through which to cover systemic / or more approaching to it / on the large set of factors for optimization of structures.

The complexity of the transport system and its features as a single multi-tier system of a large area suggests a qualitatively new approach to restructuring. All experiments show that over the past 10 years the changes are made through the old routine and partly scientific methods and do not give the required result. For this purpose, the need for comprehensive research in terms of:

- demand for transport and the dynamics of their development;
- transport options to meet the needs, the necessary pace and directions of development,
- modal, which are based on the structure of industries and cargo and passengers;
- Transport as part / subsystem / from one socio - economic system.

This requires the development of systems theory and methodology for the study and design of transportation structures and application of uniform approaches, methods and criteria for analysis and evaluation of the structure of transport and existing information bases, raise fundamentally new information and choosing the correct option structuring of transport. Any other approach absolute one or other system characteristics or facilitate the rational structure would again lead to subjectivism and wrong decisions. Again, they will cause major imbalances in the structures of the different modes of transport and between them. As a result, continually persist bottlenecks to be removed piece and contradictions will intensify.

Now there is a real danger to the structures of which have a strong hierarchical structure. By continuous strong centralization can switch to unreasonably greater decentralization, leading to new imbalances and huge losses in the public scale.

To solve these tasks is necessary disclosure of the problem situation, characteristic of the transport system and on this basis to determine: Does the study and improvement of structures; what are the main problems to be solved given the current state of transport with what methods and how to organize the study. Attempt to solve these

problems is made in this paper. Its further expansion, however, is beyond the power of a researcher and a complex examination must have the following conditions:

- Availability of theoretical and methodological tools for analysis, design and structural improvements.
- Willingness to conduct and financing of major research and design.
- Built research and design engineering team. It is a clear concept for the purpose, structure, operation and management of the team itself.

5 METHODOLOGICAL PROBLEMS IN THE RESTRUCTURING OF THE TRANSPORT SYSTEM

Extracted features of transport in large, complex and dynamic system make it necessary to carry out a thorough analysis of structurally complex factors. The test must be obeyed model in which to solve the following tasks:

- Achieving maximum scope of elements that are crucial for the establishment and operation of production structures.
- Develop a methodology providing complexity and unity in the approach to the restructuring of the elements in the entire hierarchical and horizontal chain transport system.
- Combining "The theoretical" content and "inclusiveness" of the study to be invariant for all subsystems.
- Definition of objectively necessary for the transport characteristics of meaningful research methodology and content of the stages of research, design and improvement of production structures.
- The nature, content, thematic scope of the study, analysis and design of production structures and highlights the evaluation of conceptual designs and deciding on the application of the chosen structural model.

In essence, the task is to develop the basic problems of the content of the research methodology. It should be emphasized that the possible logical structure of the content of the research project and task cannot be fully comprehensive. This is natural given the complexity of the object to which it develops. At the same time the aim is to offer a construct that defines the methodological framework which can complement the new elements in research and design in accordance with the specifics of the objects and purposes of the study. The main thread, the proposed research approach is a system -oriented research and design and implementation of complex results.

The parameters of the elements of the structure of production are described as the input of the transport system, and the assessment of their effective use to be made after the comparison with the results at the output. Their evaluation is qualitative and quantitative, and covers the most common material, financial, informational and social impact resulting from the operation of transport. On this basis, determines the efficiency of the operation as a separate set of selected indicators of inputs and overall system efficiency. The study is done generally on several levels. At the first level is made describing / inventory / transportation structures as a whole. An assessment of the conformity of production structures and their functional characteristics of the structures of the external environment in the context of the ability to satisfy its needs.

Second hierarchical level / or right next order procedure / transport is seen as a cybernetic system with appropriate input-output parameters.

Thus established: effectiveness of physical, financial, informational, scientific and technological exchange between transport and the environment; reveal to white flight , unused mutual opportunities density of connections and the main problems to be solved in this direction; open possible alternative solutions to meet the needs of the external environment and the necessary structural changes in transport; doing is an overall assessment of the effectiveness of the functioning of the transport system selected quantitative and qualitative criteria.

At the next level the same procedure is repeated for modal their structural subdivisions, etc. up to the level which is necessary to decide exhaustive research task. The depth of study is determined by the weight factors which have certain hierarchical levels on solving the problem. Indicate discontinuation of the study was the sharp drop in the magnitude of the impact of the next level regardless of the direction of research in space. This is a principle that we conventionally call „fading effect of the impact."

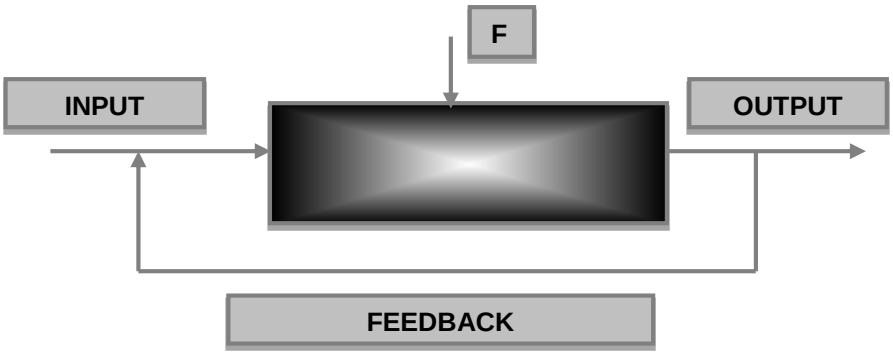


Fig. 1 Elements of the system (cybernetic approach)[1]

For example, for the study and design of the structure of the transport system have certain criteria important to the regional European level / structures in the external environment in the country and the Balkans / and other / example for technological connections to / from the global level. In decreasing term, the most important are the structures of the first rank divisions of different transport modes.

Horizontally, the factors which have a relatively high density of connections, and thus a high degree of impact.

We should emphasize that in the literature this topic is poorly researched and lacking a formal mathematical or logical model for determining the boundary of fading away / minor / impact . This problem is under study and is hardly forces the author to solve it alone within the limited time available for testing. To overcome this system-wide theoretical and methodological difficulty here will offer the hypothesis that the degree of impact is high up to a certain threshold , after which its value falls sharply and the amount of the magnitude of the impact of all other / essentially endless array of levels / always less than the sum of the effects of rows before plunging .

The application of this hypothesis possible reference ranges only when a reexamination of relatively stable systems and when the first / comprehensive study / are described, and the degree of their influence on the parameters of the object. For this reason we will assume that the boundary of the study will be determined by the density of connections and their importance for the subject and the significance factor.

The second research line is parallel to the first and carried out in compliance with the principles outlined above. Object of study are structural elements of general systems research object. In the first approach in depth study was carried out on the "identification of the elements of the black box by subject statuses, i.e. when objects / black boxes of the next level are actually existing, identified and defined as subsystems as their study on cyber.

The second beam research is carried out conditional call it „systematically opening and identification of the black box 'of the functional status of the items. This is a research task of almost all scientists in system theory, which has not yet decided on a unified theoretical and methodological basis. Nevertheless, the proposed approach for the identification of functional elements of the transport system is an attempt to put into practice the achievements of scientists in this field and to contribute to the practical solution - improvement of the structure of the transport system.

The proposed parallel study on cyber and system-functional approach is an attempt to direct the research in accordance with the hypothetical herein defined "double helix social system objects." Agreed results of these comparative studies can provide valuable results service

[1] *System, viewed as relatively independent site management is presented as a black box, which implements processes for the conversion of input to (X) resources to achieve certain results to the output (Y). This process is carried out under constant external influences (F).*

design options structures of production and selection of the optimal model.

Proposed elements as an object of study are not sufficiently comprehensive systemic perspective. Their selection is made in accordance with the specifics of the site and serving as the maximum proposed approach. More important are the formulation, classification and analysis of:

- Objectives
- Functions
- Technologies and mechanisms
- Structures
- Resources including material, labor, financial, information and innovation.

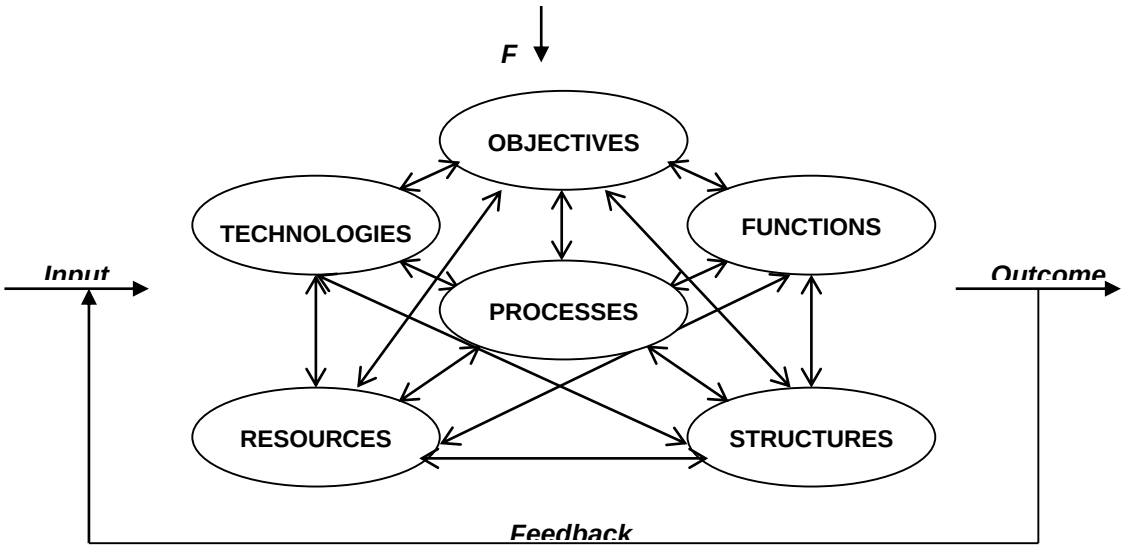


Fig. 2 Principle model of integration elements

6 CONCLUSIONS

Summary of the contents of this study lies in the following:

- Each functional element is considered as a single system and its "ideal" parameters and specifications comply with all the others, where the structure has equal importance.
- The results of this study are used in conditional output of the structure as a system of I rank. In this procedure, determine the necessary limits of structural change and the new parameters of the other elements, but only eligible / in systemic context / framework. These results are used directly in the design of I version of the model and then iteratively re-ordination is developed II version, etc. to afford an optimal balance of the structure model.

The resulting models from this study agree with the models of the research cybernetic approach / one of two parallel research directions / and proceed to the final stage, the actual design.

The proposed methodology is based on cybernetic and systemic approaches. This creates conditions content and the procedural steps to be used in the restructuring of other industries and manufacturing sectors. The studies suggests a contemporary approach which outlined the most important (providing an exhaustive detection of problem situation) procedures for analysis and design. In their practical realization of teams can without problems to fit different approaches and methods of analysis, strategic planning and process management restructuring.

Science is still liable for the lack of a method to study and design of transportation structures covering a systematic basis factors determining the structure. This defines the main objectives of this paper. It is oriented towards the:

- detection of unresolved theoretical and methodological problems in this area;

- output of the main factors determining the structures and principles for restructuring;
- research and analysis of existing structures;
- output of the main directions for improvement of the structures of transport and developing a methodology for testing and analysis.

The results of the study can be used as an option for evaluating the proposed development of further extensive studies, and their performance and for a particular practical realization of the structural changes.

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Received for publication: 02.02.2014
Revision received: 02.04.2014
Accepted for publication: 23.06.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Vasilev, V. (2014, 07 15). Change management through improvement of the production structure of transport - New challanges. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 258-265. doi:10.12709/mest.02.02.02.26

*Style – **Chicago** Fifteenth Edition:*

Vasilev, Vasko. 2014. "Change management through improvement of the production structure of transport - New challanges." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 258-265. doi:10.12709/mest.02.02.02.26.

*Style – **GOST** Name Sort:*

Vasilev Vasko Change management through improvement of the production structure of transport - New challanges [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 258-265.

*Style – **Harvard** Anglia:*

Vasilev, V., 2014. Change management through improvement of the production structure of transport - New challanges. *MEST Journal,* 15 07, 2(2), pp. 258-265.

Style – **ISO 690** Numerical Reference:

Change management through improvement of the production structure of transport - New challanges. **Vasilev, Vasko.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 258-265.

MEST Journal
DOI 10.12709/mest.02.02.02.27

INFLUENCE OF THE WORLD TRIAD COUNTRIES MANAGEMENT ON THE DISPROPORTIONAL DEVELOPMENT OF GLOBAL ECONOMY

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JEL category: **F, F15, O1, O19**

Abstract

Article deals with the analysis of the influence of the countries of world triad on the processes of globalization, the reasons for the balance of the proportion "investment fund - accumulation fund – consumption fund" violation are studied; the imbalance of the world development and especially the uneven development of the Center and the Periphery is investigated; economic development in general and economic life of separate countries and regions modification is analyzed; the reasons of disproportions of global social and economic development are discovered; the prognostication of the development of Euro Atlantic (American), European and Asian globalism is made. Author defines several approaches concerning the reform and restructuring of the world global economic environment. Among them there are two the most dominant. The first is based on the construction of center-periphery model, which involves the federal development of a world. The second is based on liberalizing trends in monetary and financial sphere. Author indicates that formation of a complex model of regulation will become one of the main tasks of the international community (the international society) in the XXI century.

Keywords: ***World triad, global economy, disproportional development, globalization, economic development***

1. INTRODUCTION

For the last 30 years management of the world economy has been characterized by some peculiarities of the development, in particular: strengthening of the social and economic inequality between countries; accumulation of the considerable disproportions in the financial sphere; appearance of the essential differences in the branch structure of economic systems of different countries of the world.

During the XX century the core of the world economy had been represented by the countries of the world triad (USA-Japan-EU), which, by the colossal scientific, technological and industrial potential have become the main producers of

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goods and services and, by conducting long-term aggressive expansion in all segments of the world market, they control almost 75% of international trade and approximately 80% of investments and financial flows.

In particular these countries today can really influence the quantity and quality parameters of global economic system and determine main tendencies of world economy development, while rest of the countries can only "adjust" to strategies of their corporations, activity of which have become global and oriented on setting total control over the most profitable spheres of international business and also monopoly on nature, industrial, technical, information and financial resources of receiving countries.

2. ANALYSIS

Among the scientific articles, which contain the fundamental development of issues, connected with the irregular character of the development of the world economy at different historical stages of its evolution, it is worth to name the works of such foreign scientists as O. Bilorus (2011) in his work "The political economy of globalization and problems of structural modernization of the national economy", V. Heyets' (2009) in his article "Macroeconomic estimation of monetary-credit and currency politics of Ukraine during and after the financial crisis", S. Korablin (2010) in his work "Postindustrial Ukraine", L. Shynkaruk (2011) in his monograph "Structural changes and economic development of Ukraine", O. Solodovnik (2010) in his article "The imbalance of the environment of the corporate sector of economy of Ukraine" and others. Their works are devoted to the research of modern processes taking place in the globalized economy, the analysis of interregional and intraregional disproportions, asymmetries, imbalances of social and economic development, trans-nationalization of economic systems and processes of a global competitive environment, economic divergence and convergence of countries, global financial integration and process of techno-globalism and so on.

But many aspects of this many-sided scientific problem, which is connected with the management of disproportional development of the world economy stay insufficiently discovered and based. In its turn it defined the aim of our research, which lies in the prism of determining the influence of world triad governments' management on the disproportional development of the global economic.

In such a way, the system research of the reasons of disproportions of global social and economic development is very important in both theoretic and practical way for the for the further development of both economy of Ukraine and European countries, which are not EU members – it caused the choice of the topic of this article, its aim and tasks, which are the following: analysis of the influence of the world triad on the processes of globalization; studying of the proportions disbalance reasons "investment fund - accumulation fund – consumption fund"; the prognostication of the development of Euro Atlantic (American), European and Asian globalism.

While carrying out the analysis of disproportional development of world economy, first of all, we would like to mention the analysis of the increasing influence of the countries of the world triad on the processes of globalization. In such a way American crises at the beginning of 2008, sensational collapse of the Japanese corporative economic machine since 1989, phenomenal development of China after 1978 – all these demonstrates the increase of the role of the country in the conditions of globalization.

As it is indicated in the analytical journal "Korespondent" for 2013, Japan, recently the main competitor of USA in world economic dominance, has got in trouble. Despite of the relatively successful life of ordinary Japanese, finances of the country causing the anxiety of experts, as the national debt of Japan for the moment exceeds 236,6% of GDP (GDP of Japan is 4,6 trillion USD, which is 26,2 thousand USD per head), which is the world record. To compare: for the violator of the European financial peace Greece, this index equals 175%. Japanese budget deficit for the last year is approx. 10% of GDP, which also exceeds the indexes of any country from Euro zone (Korespondent, 2013, p. 37-38).

Two decades ago Tokyo used to be the main and powerful Asian tiger. It was considered that this rapidly rising economic will exceed rising economic of USA. However, the Japanese not just disappointed the expectations of experts with

more than not reaching the scale of the leader the USA, but yielded their second place to the "new economic geeks" - China. Its export collapsed, the national debt soared, corporate culture of management became out of date, the bureaucracy increased, and the population is ageing. This is indicated by the following facts, which we will consider below.

Recently for the consumers all over the world qualitative electronics could only be Japanese, but now the initiative belongs to the USA, South Korea and China, and this in its turn affected the profits of Japanese corporations. According to the American news agency Bloomberg, the companies Sharp, Panasonic, Sony in the past five years have suffered losses of more than they could earn in the last two decades (e.g. Sharp in 2008 showed a net profit of 1 billion USD and in 2012, the loss of the company was 4.7 billion USD). The causes of these losses - focus on equipment that uses CDs (blue-ray), expensive technology in television sets production, while in South Korea producers have begun to use more advanced and affordable technology. As a result, in 2012, Japan's trade deficit reached a record of 78 billion USD, which, in comparison with the previous year increased on 170% (Korespondent, 2013, p. 36-37).

One more threat is the population ageing. For the last 20 years the quantity of Japanese, whose age equals or exceeds 65 years, almost doubled and reached 23%. For comparison, in the USA this index equals 13% and the European average index is - 16% (Germany - 21%, Italy - 21%, Greece - 19%, Sweden - 19%). In its turn, a significant increase of the number of elderly people requires the increase of public expenses on health and social services (in Japan this article of expenditure is 29.2% of the state budget).

Japanese corporative culture also cracked, as young people don’t endure heavy loads and high demands at work in large corporations, and therefore about 35% of the working of the Japanese work on a temporary basis, which as a result leads to the fact that the Japanese household income fell for more than 12% in 15 years.

The Government of Japan starts to reform pensions, public administration (de-bureaucratization), increases deposits (about 150 billion USD) to the modernization of enterprises and infrastructure and monetary policy conduction.

In its turn the last instrument of yen devalue can provoke monetary wars all over the world (central banks of other countries will start to devalue their own currencies to balance the appearing disproportional conditions in trade operations). It is important to understand that the action of any government (Japanese in this case) has both positive and negative effects. Thus the increasing inflation, even though it is favorable for export, it is negatively reflected on the incomes of average Japanese.

In the conditions of the globalized economy it is impossible for all the countries and especially for Ukraine, or any other country of Europe to overcome the disproportions in the development of country economy without cardinal, unpopular extensive structural and modernizing reformative administrative actions.

In its turn, a high propensity to investments and low personal consumption in countries with emerging markets increased their immunity to the crisis phenomenon in the global economy. Thus, investments in China increased from 30-35 % of GDP in 1990th to 45-50 % in the current decade, and the part of private consumption remains extremely low (Korablin, 2010)).

At that diversified investments in technology and production inputs made this country almost immune to the crisis: after the slowdown of China's GDP to 6.1% in the mid-2009, six months after they again rose to 9%.

According to the data, provided by the scientific and analytical journal "Korrespondent" for 2013 China had set a record by the scale of trade turnover, leaving behind the permanent leader on this index, USA, who had been the leader since 1950. In 2012 China sold goods for 3.87 trillion, which equals more than half of its GDP, and USA – for 3.82 trillion USD. Its growth was reached owing to the increase of the internal consumption, and it in its turn changes the alignment of forces in the world globalized business-arena. For example, Germany, the economic leader of EU, considers China as one of the priority trade partners. By the year 2020 the import from Germany to China would have be exceeded,

according to the data of the invest bank Goldman Sachs analytics, the supply of the German goods to the neighboring France. Now the financiers aspire to foreseen when China will put an end to the competition with USA, showing the biggest GDP in the world. According to the estimation of the international audit company PricewaterhouseCoopers, this is going to happen in the nearest four years, and only force majeure obstacles of the third world war scale can prevent it (Korespondent, 2013, p. 8).

During the period 1950-2005 the share of China in the world GDP rose from 3.3 to 20%. It is expected that in 2025 it will first surpass the United States by GDP (China's GDP is 20 trillion dollars, and the USA is 14-15 trillion dollars) and will take the second place by the scale of the total national wealth. In 2006 China spent 60 billion USD on research and scientific development and in 2025 it will invest in this sphere more than 100 billion USD. Today it invests into the economy phenomenal savings - 45 % of GDP. Since 1978 a lot of countries have invested to China. In 1978 to China was invested 500 billion USD. As a result of industry growth has reached on the average 18% per year. China sees itself as a potential superpower of the world. By 2050, it would really become such a new superpower. Its policy will be active expansion.

In recent years, the list of China's economic victories increased, and already for four years it has been a leading exporter and the world's largest car market. The country is also considered to be the record-holder of the electricity consumption. Besides, China is the main producer of gold in the world and the largest holder of foreign reserves – 3.3 trillion USD.

So, taking into consideration that the correlation between accumulation and consumption significantly influence the rates of production increase, the level of population consumption and effectiveness of social reproduction, we can conclude that breach of proportions balance "investment fund – accumulation fund – consumption fund" in favor of personal consumption in the developed countries has become the factor which limited their possibilities in provision of the further stable economic development and increase of the investment scope under the limited personal consumption in the countries with markets which are being formed, have strengthen their unreceptiveness to the manifestation of the global crisis (Solodovnik, 2010, p.77).

We think that the backgrounds of the crisis worth to be sought in the proportions which characterize the formed in the last dozen of years structure of money and correlation of full-bodied money and not full-bodied money (quasi-money).

Private capital always sensitively reacts on the threats of the economic and political stability and when such threats really appear, it chooses various foreign investments as the means to preserve itself. Outflow of capital determines the wastes of not only separate country, but it is also the factor which destabilizes the financial systems of other countries. Particularly the flow of the "hot money" can have inflationary consequences, lead to increase of rate and credit risks in the country, to which they are directed and become a reason of balance and economic stability disturbance of the world (example: Ukraine).

One of the directions of the economies of the former Soviet bloc market transformation in the 1990s of the twentieth century was the accelerated liberalization of the monetary and financial relations, which in terms of infrastructure underdevelopment of financial markets and the lack of necessary legislation has created favorable conditions for illegal withdrawal of significant amounts of capital to developed countries. Local financial crises that occurred during this period in Asia and Latin America, has also been accompanied by the influx of "hot money" on the financial markets of developed countries. Therefore, even before the global financial crisis, the volume of "hot money" and short-term capital, which have a high degree of mobility and are practically not implemented in the real economy, at times exceeded financial strength of the central banks and national governments. The growth of the financial and political risks in countries with emerging markets, also resulted in the change of direction of direct investment of the developed countries, the priority recipient of which is the corporate sector in other developed countries (Solodovnik, 2010, p.77).

There is a thought that by the year 2025 the Asian globalism as a system would have become stronger than Euro-Atlantic globalism and would

totally dominate in "non-western" part of the world. Global Americanization would face more and more strong opposition. On this base European globalism of European Union would become relatively stronger. Union of powers of Euro-Atlantic (American), Asian and European globalism would contribute to general strengthening of the globalism system and its transformation into the new social and political formation. The process of globalization would become unceasing and its consequences (positive and negative) would become unalterable.

According to this scenario globalization will lead to the world-wide consolidation already in 2015-2080 to the level, which foresees forced coercive globalization with creation of global supra-state bodies under the control of vanguard "global" countries, and USA would pretend to this position most of all. Let us notice, that USA requires "freedom of global market space" but at the same time they don't hurry to globalize and rank one of the last places in the world by the level of global dependence and globalization of their economy with the index of only 10-12% (Bilorus, 2011,pp.7-10).

Strengthening of economic globalization in their opinion of "those who globalize" will inevitably lead to political globalization which will for sure cause creation of the "world government", the aim of which will be the "building of the new global world structure", i.e. global state for those who globalize, correspondingly with their manager. Not in vain European theorists of anti-globalism stand against coercive globalization and consider that exactly national strategies and politics and not the "invisible hand of the global market" would determine the economic development of the world.

Most of the contemporary scholars consider that the power globalism is purely USA project. Even the American scholars-economists and businessmen recognize it as the "fundamentalism of the free global market". With the help of the globalization USA try to conduct "revolution capture" of the whole world economy. Any other economic civilization, besides the globalism system, is being reclined by them. Only 10 developing countries managed to integrate into the globalized market of the 20th century. Among them there is neither Russia, nor Ukraine or other countries of the Eastern Europe. We should think of it. Let us give such examples of the globalization results: 81% of the direct investments capitals fall on northern countries of the life level – USA, Britain, Germany, and Canada. And if the developing country stops guarantying superprofits to the global investment capital, in such a case, its escape from there can be provided with a single click of the computer.

Theory of global studies and future political economy of globalism, as a new social and political order must disaffiliate with necessity of uniting the existing power of TNC with first-priority power of national countries which can be united in different unions.

O. Belarus in his research indicates that the authorities of Ukraine should understand that the future of the country lies primarily in the way of their competitive technological and managerial integration to strong global institutions such as the European Union. So first of all it is necessary to solve the problem of international competitiveness of Ukraine's economy and its public and corporate management. We also should remember that in the twenty-first century the legitimacy of any economic system will be measured by the level and quality of life of working citizens and not billions of dollars of the batch of oligarchs. We believe that Ukraine will be able to effectively join the future integration of the global system that is created around the EU. This is the particular objective interest of such leading European countries as Britain, France, Germany and Italy where the unemployment rate has reached 10-12%. Without Ukraine, the political and economic system of Europe is not globally competitive. Especially if to take into consideration the fact that the danger of malignant globalization model for the USA are not limited with only economic threats. Against the backdrop of population growth in the USA, in the West, taken as a whole, there is the extinction of countries – there are raging demographic crisis and the process of depopulation. Today the non-Western world is 5 times larger than the West, and in 2050 it would be 10 times larger. The population of the West is reducing not only by relative but also by absolute terms. Thus the West is aging, and the East is getting younger. Western Europe has no reserves, as the population of Russia and Ukraine is also reducing. In 2000, the population of Great Europe,

including Eastern, was 728 million; in 2050 it will decrease to 556 million, i.e. on 172 million people. And according to the forecasts in Russia by 2050 beyond the Urals will stay less than 1 million of ethnic Russians (Bilorus, 2011, pp.13 -14).

Imperial globalism of both USA and Asia will lead to explosive inequality. Even now the ratio between the standard of living of the 20% rich and the 20% of poor in the world is 1:75. The critical level may be 1:100, which will inevitably lead to the global social explosion. This is not a science fiction, this is social globalization. As we have already noted in 2050 China's GDP will exceed USA GDP in 75-80%. Center of political and economic power will move to Asia. In 2025 Asia will produce 45-50% of world GDP. Asian economic leadership is inevitable. Forecasts show that by 2050 the share of Asia, led by Tianxia in the global economy will reach 57-60%. But how would the Asian globalism look like?

In the West, European Union together with USA can resist China but on conditions that EU would successfully realize global strategies which it already has. European Union is now practically equals a world hegemon, i.e. USA, in trade and currency spheres. Global strategy of EU consists in transformation of monopolar world of USA into more difficult and more acceptable structure. European Union also has to displace itself in the sphere of economics and global safety. But global strategy of European Union significantly differs from American, as it doesn't require the hegemony over the world for itself. Europe doesn't consider itself the Center of the world. It wants to be the center of people's development and progress.

So, the process of globalization had become the logical continuation of world economy upheavals which happened at the edge of the centuries and have been characterized, first of all by the changes in the world economy system. At the edge of the millennium economic development in general and economic life of separate countries and regions modified significantly, indicating the influence of new factors – appearance of new industrial, transport and communication technologies, unseen before forms of organization and management (enlarged international corporations) with the simultaneous sharpening of the competitiveness. The integrated global market as the integrity of planetary scale has appeared. The process of globalization has significantly intensified the rates of innovations and demonstrated the necessity of creation of flexible markets of labor, goods, capital, modification of the existing principals of regulation and management. Functions concerning national regulation of their economics got out of control. Hard and global competitiveness undermines the effectiveness of models of social orientation, the problem of finding a "free niche" in the new international division of labor becomes sharper. Such changes cause significant effect on the financial sphere, where mass and fast international overflows of loan capitals distorted the balance in this sphere and provoke various crisis situations. As a rule, serious financial problems in a particular national economics rather quickly transfer to ("infect") other countries (Argentina default). Powerful bank or monetary disasters are spread around the world with unprecedented speed (striking example of this is Asian crisis of 1997-1998, and 1998-1999 Russian crisis) The current financial crisis of 2008, which began in the United States with the bankruptcy of mortgage banks also turned into world crises instantly.

3. CONCLUSIONS

The imbalance of the world development and especially the uneven development of the Center and the Periphery were expressed in the most sensitive sphere - the sphere of credits and finances. Rapid globalization of world economic processes, which originated from the late 70's and early 80's of the XX century was accompanied by a number of acute financial turmoil. In the conditions of the increasing openness of the economies this kind of turmoil and crisis cause damages to even those countries that are not directly involved in this process. Violation of the entire system of economic relations became the natural result of strengthening such imbalances in the world economy development, as: asynchrony of the development and increasing gap between financial sphere and the real sector of economy, the instability of the ratio between accumulation and consumption, a growing imbalance between the amount of savings and investments, change of the direction and structure of cross-border flows of capital, continued imbalance in the current accounts and capital transactions.

That is why world community sharply faces the problem of improving the mechanisms and methods of collective regulation of global processes - search for fundamentally new, supranational regulatory model of global economic processes. As of today, there are several approaches concerning the reform and restructuring of the world global economic environment. Among them there are two the most dominant. The first is based on the construction of center-periphery model, which involves the federal development of a world. The second is based on liberalizing trends in monetary and financial sphere. Formation of a complex model of regulation will become one of the main tasks of the international community (the international society) in the XXI century (Vdovichen, 2012).

So that Ukraine was able to use the opportunities of the present crisis to strengthen its position in the global economic and political space it is necessary to conduct scaled restructuring of corporate sector, which should be based on a combination of innovative activities of corporations with a common industrial policy of the state on the basis of objectivity of correction value of assets in global and domestic markets, limitation of the foreign direct investment, the growth of mobility and unpredictability of traffic. This requires the complex methodological studies of mechanisms of formation and portfolio investment flows, large-scale violations of international trade balance, as well as prediction of ways of rapprochement of financial and real sectors of the economy, the implementation of programs of macro and micro restructuring of the domestic corporate sector in the crisis and post-crisis development of the world economy.

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Received for publication: 31.01.2014
Revision received: 13.06.2014
Accepted for publication: 07.07.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Vdovichen, A. (2014, 07 15). Influence of the world triad countries management on the disproportional development of global economy. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 266-273. doi:10.12709/mest.02.02.02.27

*Style – **Chicago** Fifteenth Edition:*

Vdovichen, Anatolii. 2014. "Influence of the world triad countries management on the disproportional development of global economy." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 266-273. doi:10.12709/mest.02.02.02.27.

*Style – **GOST** Name Sort:*

Vdovichen Anatolii Influence of the world triad countries management on the disproportional development of global economy [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 266-273.

*Style – **Harvard** Anglia:*

Vdovichen, A., 2014. Influence of the world triad countries management on the disproportional development of global economy. *MEST Journal,* 15 07, 2(2), pp. 266-273.

Style – **ISO 690** Numerical Reference:

Influence of the world triad countries management on the disproportional development of global economy. **Vdovichen, Anatolii.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 266-273.

MEST Journal
DOI 10.12709/mest.02.02.02.28

NEW METHODS OF SOFT COMPUTING IN REGIONAL DEVELOPMENT STRATEGY FORMATION

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JEL category: **C51, C52, R58**

Abstract

An urgent necessity in socio-economic regional development strategy specification is being substantiated for the purpose of reconstructing and adjusting the TEA (Types of Economic Activity) structure, which is able to speed up the development of GRP (Gross Regional Product), GS (Gross Surplus) per person and steadily grade current interregional differentiation and asymmetry. To reach the target a special algorithm for Soft Computing has been created. On the example of the selected region it was proved that the present economic system is not self-organized and it requires an efficient public management. If the regional management strategy is not optimally chosen then in the system some uncontrolled fluctuations can be observed, that may lead to an economic crisis and the "collapse" of the economy system. Mathematical models of optimization of strategies building of 3 types have been constructed and their effectiveness has been quantitatively researched. It is proved, that the dynamic management strategy with the maximizing of the objective function at the end of the period under investigation, turned out to be the most effective. It is established that public administration which is based on a scientifically grounded quantitative approach, using advanced mathematical models of Soft Computing, allows building a strong economic foundation, which will be the basis for a further rapid growth of the regional economy.

Keywords: *soft computing, economic modelling, neural networks, regional development strategy*

1 INTRODUCTION

The issues of asymmetry and unequal regional development, striking differentiation are under consideration in numerous publications on the subject. New approaches to the development of reproducing different structural types in the framework of the intensive growth and interregional leveling of added value creation per capita are not founded, a driving force algorithm, which might be oriented on fulfilling the task as a stable way practice, haven't been proposed yet.

In general terms the task lies in the following: to formulate an algorithm of defining envisaging the constituents and dynamics of tempo and

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proportions meeting the demands of the relevant regional conditions of various forms of economic activities which provide a necessary scale of the market actors' participation in the reproduction process to increase the output of the added value per capita. It can also be proved that the deviation of the predicted values from the analogous values elaborated by the classical trend models can be an important criterion of the regional development efficiency evaluation which was already calculated for the regional development strategy by the classical trend models.

It is suggested to consider the referred issues and make calculations on the data of Chernivtsi region of Ukraine.

2 THE PROGNOSTICATION OF THE REGIONAL DEVELOPMENT ON THE BASIS OF TRENDS MODELS

Let's arrange the economic activities according to two criteria: (1) the proportion of value added in the production of economic activity, and (2) the ratio of the contribution of economic activity in the GVA of the region (table 1).

Table 1 *The basic economic activities of Chernivtsy region*

No.	The share of value added in production of economic activity kinds (EAK)	The share of EAK contribution to GVA of the area
1	Financing activities (77.1%)	Agriculture, hunting and forestry (18.7 %)
2	Education (71.0%)	Trade, repair of motor vehicles, household goods, and items of personal use (16.8 %)
3	Public administration (67.9%)	Education (11.1%)
4	Trade, repair of motor vehicles, household goods, and items of personal use (66.9%)	Public administration (9.7%)
5	Health care and social assistance (66.4%)	Transport and communications activities (8.7%)
6	Provision of collective and individual service; activities in the field of culture and sport; activities of households; activities of extra-territory organizations (62.5 %)	Manufacturing (8.4%)
7	Transport, storage and communication (55.5%)	Health care and social assistance (5.5%)
8	Real estate, leasing, engineering and providing services to businessmen (55.3%)	Real estate, leasing, engineering and providing services to businessmen (5.4%)
9	Mining (46.7%)	Construction (5.3%)
10	Agriculture, hunting and forestry (44.8%)	Financial activities (3.4%)

Source: Calculated by the authors on the basis of data from the State Statistics Service of Ukraine.

The proposed ranking actualizes the issue of the rates and proportions which should be used to develop economic activities in the region to maximize the production of GVA.

Thus, we come to the conclusion that to model a modified strategy of the EAK development we must find a similar form of the functional dependence of the total value added of GVA upon EAK. It is logical to select the most important economic activities to achieve the objective. On the basis of ranking, nine most influential EAK have been selected (the Table 2).

The trend model involves the calculation of predictive values, provided that the system will evolve according to well-established trends. During the calculation the 25 classical trend functions were analyzed. The best agreement with experimental data was shown by the linear and quadratic function:

$$\mathrm{GVA}_{\mathrm{line}} = -1637238{,}2 + 818{,}69091 \cdot \mathrm{Y} \quad (1)$$

$$GVA_{quad} = -191176060 - 191466{,}221 \cdot Y + 47{,}939394 \cdot Y^2 \quad (2)$$

where Y – is a year.

According to created trend models in 5 years in 2015 we can expect the next size of added values: 12,424 mln UAH according to the linear prognostication and 16,353 mln UAH if the growing has quadratic trend. We will consider these values as patterns (figure 1)

Table 2. *Dynamics of gross value added according to the types of economic activities (At current prices in mln. UAH)*

№	Types of economic activities	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
GVA	Total	**1740**	**2002**	**2382**	**2888**	**3665**	**4401**	**5792**	**7586**	**7391**	**8617**
(x_1)	Agriculture, hunting and forestry	575	600	581	734	894	916	1194	1503	1488	1800
(x_2)	Manufacturing	230	248	321	337	470	604	860	973	770	808
(x_3)	Construction	70	90	131	171	233	326	464	627	443	513
(x_4)	Trade, repair of motor vehicles, household goods and items of personal use	311	349	467	593	708	804	1127	1433	1383	1620
(x_5)	Transport and communication	145	206	264	311	356	432	472	694	721	834
(x_6)	Real estate, leasing, engineering, and providing services to businessmen	98	114	123	142	174	258	337	447	449	515
(x_7)	Public administration	90	119	138	176	285	379	483	773	787	932
(x_8)	Education	149	188	245	290	375	466	583	788	925	1070
(x_9)	Healthcare and social assistance	72	88	112	134	170	216	272	348	425	525

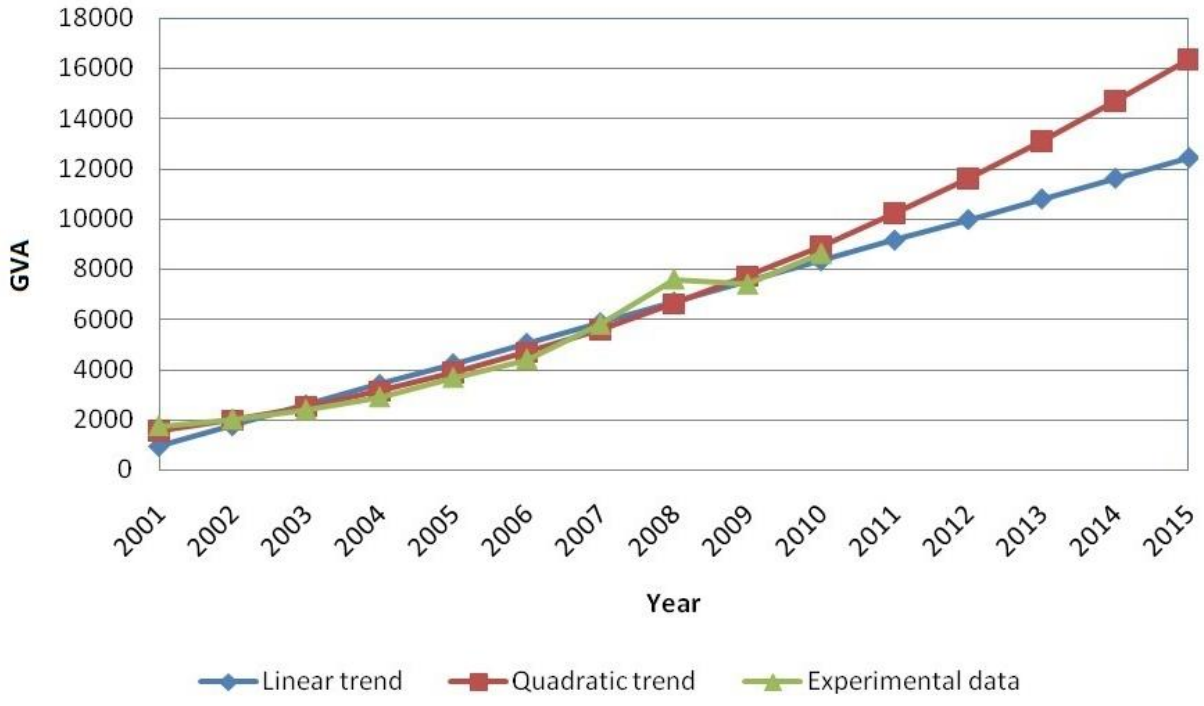


Fig.1 The dynamics of the Gross Value Added

The problem of the construction of region development strategy based on analytical form of functional dependences of the gross value added on their components means that there are no data about factors which affect x_i components. The classical prognostication method means it is necessary to build the trend model for each x_i.

Table 3 The results of the correlation analyses between components of the gross value added

	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9
x_1	1.00								
x_2	0.90	1.00							
x_3	0.93	0.99	1.00						
x_4	0.99	0.94	0.96	1.00					
x_5	0.98	0.89	0.92	0.99	1.00				
x_6	0.99	0.93	0.95	0.99	0.98	1.00			
x_7	0.99	0.90	0.93	0.99	0.99	0.99	1.00		
x_8	0.99	0.88	0.90	0.98	0.99	0.99	0.99	1.00	
x_9	0.99	0.85	0.88	0.97	0.99	0.98	0.99	1.00	1.00

Next, on the prognostication values of x_i, prognostication values of the gross value added can be determined. Our calculation showed the similar results can be achieved. The disadvantage of this approach is that it is unusable to realization of the sensitivity analyses and therefore it is unable to use for optimization of region development strategy. The correlation analysis was held for investigation of x_i components interplay (table 3).

As it can be seen from the table the close correlation relationship between all x_i components is observed. Moreover the minimum value of correlation coefficient is equal to 0.85. According to the classical math theory the factor analysis must be carried through for decreasing of model components number (Katsikatsou, Moustaki, Yang-Wallentin, & Joreskog, 2012). As a result of this analysis the new factors are obtained. These factors are linear dependent on x_i components. Unfortunately, the semantic content of new factors is lost. This makes further analysis and interpretation of results more difficult.

3 THE DEVELOPMENT OF ECONOMIC MATHEMATICAL METHOD FOR PROGNOSTICATION OF THE REGION STRATEGY DEVELOPMENT ON THE BASIS OF HOPFIELD NEURAL NETWORK

A new math method for optimization of the region strategy development in a close relationship between economic activities was proposed. It consists of the following steps:

Step 1. *Development of the regression models.*

On this step it is necessary to carry through the regression analysis. It will enable to determine the functional dependences between x_i factors and conduct the sensitivity analysis. The nine dependencies were obtained after that:

$$x_1 = -0{,}02 \cdot x_2 - 0{,}45 \cdot x_3 + 1{,}09 \cdot x_4 - 0{,}78 \cdot x_5 - 1{,}21 \cdot x_6 + 1{,}93 \cdot x_7 - 1{,}88 \cdot x_8 + 2{,}55 \cdot x_9 + 440 \quad (3)$$

$$x_2 = -0{,}002 \cdot x_1 + 2{,}67 \cdot x_3 - 0{,}55 \cdot x_4 - 1{,}40 \cdot x_5 - 1{,}04 \cdot x_6 - 0{,}78 \cdot x_7 + 2{,}70 \cdot x_8 - 0{,}72 \cdot x_9 + 247 \quad (4)$$

$$x_3 = -0{,}006 \cdot x_1 + 0{,}36 \cdot x_2 + 0{,}22 \cdot x_4 + 0{,}51 \cdot x_5 + 0{,}40 \cdot x_6 + 0{,}30 \cdot x_7 - 1{,}02 \cdot x_8 + 0{,}27 \cdot x_9 - 89 \quad (5)$$

$$x_4 = 0{,}23 \cdot x_1 - 1{,}13 \cdot x_2 + 3{,}36 \cdot x_3 - 1{,}47 \cdot x_5 - 1{,}11 \cdot x_6 - 1{,}33 \cdot x_7 + 3{,}67 \cdot x_8 - 1{,}29 \cdot x_9 + 199 \quad (6)$$

$$x_5 = -0{,}04 \cdot x_1 - 0{,}66 \cdot x_2 + 1{,}78 \cdot x_3 - 0{,}33 \cdot x_4 - 0{,}81 \cdot x_6 - 0{,}43 \cdot x_7 + 1{,}77 \cdot x_8 - 0{,}39 \cdot x_9 + 186 \quad (7)$$

$$x_6 = -0{,}07 \cdot x_1 - 0{,}59 \cdot x_2 + 1{,}68 \cdot x_3 - 0{,}31 \cdot x_4 - 0{,}97 \cdot x_5 - 0{,}27 \cdot x_7 + 1{,}59 \cdot x_8 - 0{,}17 \cdot x_9 + 196 \quad (8)$$

$$x_7 = 0{,}18 \cdot x_1 - 0{,}73 \cdot x_2 + 2{,}04 \cdot x_3 - 0{,}61 \cdot x_4 - 0{,}85 \cdot x_5 - 0{,}45 \cdot x_6 + 2{,}36 \cdot x_8 - 1{,}05 \cdot x_9 + 91 \quad (9)$$

$$x_8 = -0{,}02 \cdot x_1 + 0{,}34 \cdot x_2 - 0{,}93 \cdot x_3 + 0{,}22 \cdot x_4 + 0{,}47 \cdot x_5 + 0{,}35 \cdot x_6 + 0{,}31 \cdot x_7 + 0{,}33 \cdot x_9 - 75 \quad (10)$$

$$x_9 = 0{,}15 \cdot x_1 - 0{,}42 \cdot x_2 + 1{,}15 \cdot x_3 - 0{,}37 \cdot x_4 - 0{,}48 \cdot x_5 - 0{,}17 \cdot x_6 - 0{,}65 \cdot x_7 + 1{,}60 \cdot x_8 + 31 \quad (11)$$

***Step 2**. Sensitivity analysis.*

On this step the analyses "What-if" is conducted. To do this the values of x_i factors were fixed on 2010 year and after that these factors have been changing alternately on 10%. It allowed investigating the change of output values (VGA) for both absolute and relative terms. Such analysis allows building the strategy of development for one time period, in our case for one year. The results of this analysis are presented in the Table 4.

Table 4. The sensitivity analysis of the regression models after the change of input parameters on 10%

Output parameters		Input parameters								
		x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9
x_1	mln. UAH		1802	1780	1979	1738	1741	1983	1603	1937
	increment		0%	-1%	10%	-4%	-3%	10%	-11%	7%
x_2	mln. UAH	807		944	718	691	754	735	1096	769
	increment	0%		17%	-11%	-14%	-7%	-9%	36%	-5%
x_3	mln. UAH	512	543		549	556	534	541	405	527
	increment	0%	6%		7%	8%	4%	5%	-21%	3%
x_4	mln. UAH	1659	1526	1789		1495	1560	1493	2011	1550
	increment	3%	-6%	11%		-8%	-4%	-8%	24%	-4%
x_5	mln. UAH	827	780	925	779		792	793	1023	813
	increment	-1%	-6%	11%	-7%		-5%	-5%	23%	-2%
x_6	mln. UAH	502	467	601	465	434		490	685	506
	increment	-2%	-9%	17%	-10%	-16%		-5%	33%	-2%
x_7	mln. UAH	963	871	1035	831	859	907		1183	875
	increment	4%	-6%	11%	-11%	-8%	-2%		27%	-6%
x_8	mln. UAH	1067	1098	1023	1107	1110	1089	1100		1088
	increment	0%	3%	-4%	3%	4%	2%	3%		2%
x_9	mln. UAH	548	486	579	461	480	511	459	687	
	increment	5%	-7%	11%	-11%	-8%	-2%	-12%	32%	

As it can be seen on the table, the processing industry does not affect agriculture, while the increasing of the added value of trade or public administration on 10% will lead to corresponding increase of added value in the agriculture. In contrast, the education development (the added value will increase on 10%) will lead to decreasing of added value in agriculture on 11%.

It means that the analysis of each coefficient of the table is very capacious and the grouping of economic activities, existing in statistics, makes it impossible to guarantee adequate values and conclusions. Therefore, for taking account of interplay of factors, SoftComputing methods can be used.

***Step 3.** Building of the Hopfield neural network.*

As it can be seen from (3-11) equations the GVA value of any kind of economic activity can be expressed with the help of other ones. The neural network with feedbacks (Hopfield neural networks [(Hopfield J.J., 1982), (Atencia, Joya, & Sandoval, 2005)]) can be used for analysis of such systems

(fig. 2.). As it can be seen from the figure, solid lines show the influence of one kind of neurons to others. Dashed lines indicate the lack of communication between neurons. The feedbacks transmit signals from the second neuron layer to the first one unchanged. On the first step the values of gross value added for the last year (2010) are submitted on the first neuron layer. The next equation is used for calculation of the values of the second neuron layers, and accordingly the values of the first neuron layer for the second iteration step:

$$X^{i+1} = X^i \cdot W^T + B^T \quad (12)$$

where:

- X^i – is a vector of the first neuron layer for *i*-th iteration,
- W and B – the linear regressions coefficients, that link types of economic activities.

The next values of matrix elements were obtained accordingly to (3-11) and the Table 2:

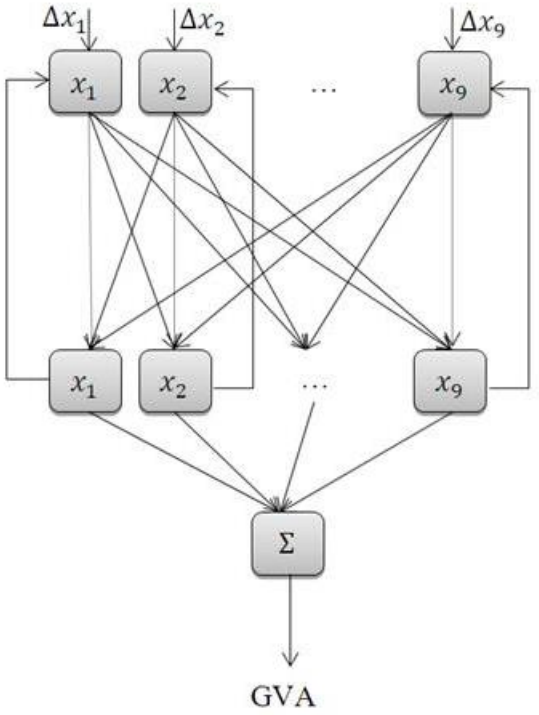


Fig.2 Hopfield neural network for gross value added calculation

$$W = \begin{vmatrix} 0 & -0{,}02 & -0{,}45 & 1{,}09 & -0{,}78 & -1{,}21 & 1{,}93 & -1{,}88 & 2{,}55 \\ 0{,}00 & 0 & 2{,}67 & -0{,}55 & -1{,}40 & -1{,}04 & -0{,}78 & 2{,}70 & -0{,}72 \\ -0{,}01 & 0{,}36 & 0 & 0{,}22 & 0{,}51 & 0{,}40 & 0{,}30 & -1{,}02 & 0{,}27 \\ 0{,}23 & -1{,}13 & 3{,}34 & 0 & -1{,}47 & -1{,}11 & -1{,}33 & 3{,}67 & -1{,}29 \\ -0{,}04 & -0{,}66 & 1{,}78 & -0{,}33 & 0 & -0{,}81 & -0{,}43 & 1{,}77 & -0{,}39 \\ -0{,}07 & -0{,}59 & 1{,}68 & -0{,}31 & -0{,}97 & 0 & -0{,}27 & 1{,}59 & -0{,}17 \\ 0{,}18 & -0{,}73 & 2{,}04 & -0{,}61 & -0{,}85 & -0{,}45 & 0 & 2{,}36 & -1{,}05 \\ -0{,}02 & 0{,}34 & -0{,}93 & 0{,}22 & 0{,}47 & 0{,}35 & 0{,}31 & 0 & 0{,}33 \\ 0{,}15 & -0{,}43 & 1{,}15 & -0{,}37 & -0{,}48 & -0{,}17 & -0{,}65 & 1{,}56 & 0 \end{vmatrix}$$

$$B = \begin{vmatrix} 440 \\ 247 \\ -89 \\ 199 \\ 186 \\ 196 \\ 91 \\ -75 \\ 31 \end{vmatrix}$$

$$X(2010) = X^1 = |1800 \quad 808 \quad 513 \quad 1620 \quad 834 \quad 515 \quad 932 \quad 1070 \quad 525|$$

Table 4. The change of the GVA values according to iterations.

Iteration	1	2	3	4	5	6
GVA	8617	8611	8638	8438	9519	3661
Iteration	7	8	9	10	11	12
GVA	35185	-134442	778077	-4130802	22276218	-119778668

As it can be seen, the diagonal elements of the *W* matrix equals to zero. However this matrix isn't symmetric. The dissymmetry of the *W* matrix is observed on sensitivity analysis results either (table 4). It is clearly seen, for example, that the impact of education on agriculture is strong, and on the contrary the development of agriculture doesn't impact on education. The symmetry of the matrix had to mean that among all economic activities there are equal direct and inverse relationships. Today the dominant influence of some economic activity sectors on the others without feedback is observed, for example the education affects the agriculture, construction has impact on real estate transactions, public administration affects health care etc. Therefore, as it was proved in the research (Cohen & Grossberg, 1983), the proposed neural network isn't stable. To check this fact it is enough to make several iterations of correlation (12) and to track the dynamics of *GVA*, which is calculated as the sum of the elements of the vector:

$X^{i+1} = (x_j)^{i+1}, j = \overline{1,9}$ (table 4).

As it can be seen on the table, the *GVA* value was slightly changed on 5 first iterations. These changes are related to calculations rounding errors. Such errors don't lead to strong fluctuations in case of stable neural networks. However starting from the 6-th iteration, a very strong fluctuation, that had disastrous effects, was observed.

Thus, approximating these results on the investigating area, it can be stated, that the self-organizing processes are missed in the system with unequal relationships between economic activities. In other words, after some time the irreversible processes of collapse will be observed in the system left without state governance.

Step 4. The construction of development strategy. To avoid such phenomena it is necessary to develop an effective impact strategy on each model factor for each step of iteration. This can be done by typing additional inputs Δx_j in neural network (fig. 2). Their semantic content is the external impact of government or investors on x_j factors. In fact they reflect the growing of GVA from *j*-th type of economic activity which resulted by effective governance before the next iteration step. Each step of iteration is an analogue to the reporting period and equal to 1 year in this case. Model, presented in a form of Hopfield neural network, allows investigating several possible strategies for managing of the region development. The time period equal to 5 years was investigated as a sample. The 3 strategies are most widespread in this case.

Strategy #1.

The development of strategy plan for 5 years with constant stimulation of all types of economic activities. It is necessary to find such impact factors $\Delta X = \{\Delta x_j\}_{j=\overline{1,9}}$, that will be unchanged for 5 years.

Then there is the following task:

$$GVA(2015) = GVA^6 = \sum_{j=1}^{9}(x_j)^6 \to max \qquad (13)$$

with limitations:

$$X^{i+1} = (X^i + \Delta X) \cdot W^T + B^T, i = \overline{1,5}$$

$$0 \le \Delta x_j \le p_j \cdot (x_j)^i, j = \overline{1,9}$$

$$(x_j)^i \ge 0$$

where p_j – maximum percentage increase of factor $(x_j)^i$.

Strategy #2.

The dynamic strategy, which involves the development of a unique optimal strategy for every next year with annual change of impact factors. This leads to an increase of total number of decision variables $\Delta X^i = \{\Delta x_j\}^i_{j=\overline{1,9};i=\overline{1,5}}$. According to dynamic system theory it may lead to better results. To do this it is necessary to solve a separate linear optimization task for each year. The numbers of decision variables for each task are equal to previous case.

$$GVA^{i+1} = \sum_{j=1}^{9}(x_j)^{i+1} \to max, i = \overline{1,5} \qquad (14)$$

with limitations:

$$X^{i+1} = (X^i + \Delta X^i) \cdot W^T + B^T, i = \overline{1,5}$$

$$0 \le (\Delta x_j)^i \le (p_j)^i \cdot (x_j)^i, j = \overline{1,9}$$

$$(x_j)^i \ge 0$$

where $(p_j)^i$maximum percentage increase of factor $(x_j)^i$for *i*-th period .

Strategy #3.

The dynamic strategy of maximization of one goal function for the last 5th year. The number of decision variables of this task is $K = 5 \cdot 9 = 45$ and limitations are analogues to previous case. The goal function looks like in (13). According to dynamic system theory, this strategy must be the most effective (Moore & Weatherford, 2001).

4 COMPUTER EXPERIMENT

As it can be seen from the (13)-(14) equations, each iteration step can appear as a linear programming task. Therefore strategy #2 is easy to build by using simplex method. The optimization tasks for the first and the third strategies are related to the nonlinear programming because of X^i vectors iteration calculation. As our calculations showed, the goal function is nonlinear and consists of local extremes. It makes impossible to use the conjugate gradient method (Maksimov & Filippovskaya, 1982) because its solution depends on the initial values of decision variables. If the choice is wrong this method finds a local extreme instead of global. Our calculations showed that it's exactly what happens in this case.

Another progressive optimization method is a genetic algorithm. According to it the values of decision variables are the analogue to the genes of living beings. And the goal function determines the adaptation state of living beings with certain genes. The genetic algorithm randomly generates the population of living beings (100 living beings show the population in our calculations). Then the processes of crossing and mutation of these living beings are simulated according to Darwin theory [(Zhang, Chung, & Lo, 2007), (Akbari & Ziarati, 2011)]. The advantage of this method is that the optimization results are not dependent on the initial values of the decision variables. The obtained value is located near the global extreme. The disadvantage is a slow speed of calculations (in our case it takes about 30 minutes for each optimization). The peculiarity of this method is that it allows violating the limitations only slightly.

Therefore the genetic algorithm was used for finding an initial approximation of optimal solutions. After that it was clarified by the classical conjugate gradient method. Calculations were carried out with the approximation that the maximum percentage increase of factor $(x_j)^i$ for *i*-th period is $(p_j)^i = p_j = 10\%$.

The development strategies, obtained as a result of calculations, are presented in the table 5.

Table 5 The obtained development strategies of region

	Δx_1	Δx_2	Δx_3	Δx_4	Δx_5	Δx_6	Δx_7	Δx_8	Δx_9	GVA
Strategy #1										
Impact factors										
	10%	10%	10%	10%	10%	10%	10%	10%	8%	
Gross value added										
2011	1980	889	564	1782	917	567	1025	1177	566	**9467**
2012	1909	872	570	1775	903	549	1026	1181	569	**9355**
2013	1935	940	545	1850	950	597	1070	1159	592	**9637**
2014	2116	604	672	1402	728	392	789	1281	415	**8398**
2015	779	2385	0	3849	1888	1443	2353	625	1412	**14735**
Strategy #2										
Impact factors										
2011	10%	10%	10%	10%	10%	0%	10%	9%	10%	
2012	10%	10%	10%	10%	6%	0%	10%	10%	10%	
2013	10%	10%	10%	10%	1%	0%	10%	10%	10%	

	Δx_1	Δx_2	Δx_3	Δx_4	Δx_5	Δx_6	Δx_7	Δx_8	Δx_9	GVA
2014	7%	4%	9%	10%	9%	7%	9%	8%	3%	
2015	10%	0%	10%	0%	0%	0%	0%	10%	0%	
Gross value added										
2011	2014	900	559	1795	929	537	1023	1167	569	**9492**
2012	2220	1006	608	1999	1000	567	1128	1278	624	**10430**
2013	2531	1149	651	2237	1052	628	1244	1391	682	**11565**
2014	2662	977	793	2195	998	539	1202	1572	626	**11565**
2015	1647	2690	226	4544	2119	1565	2700	1097	1588	**18176**
Strategy #3										
Impact factors										
2011	10%	10%	9%	10%	10%	3%	9%	10%	8%	
2012	8%	9%	10%	10%	3%	0%	10%	10%	10%	
2013	10%	10%	10%	10%	4%	2%	9%	10%	8%	
2014	8%	5%	10%	10%	8%	6%	10%	10%	6%	
2015	10%	0%	10%	0%	0%	0%	0%	10%	0%	
Gross value added										
2011	1947	904	553	1811	928	543	1030	1171	577	**9463**
2012	2290	1008	600	1980	984	590	1105	1284	606	**10445**
2013	2293	1164	637	2294	1054	634	1278	1385	719	**11459**
2014	2938	908	819	2040	947	526	1082	1643	557	**11459**
2015	970	3289	0	5412	2483	1898	3265	917	1981	**20216**

As it can be seen on the table, compared to trend forecasts (12,424 million UAH and 16,353 million UAH), according to the first strategy in 5 years control of the region will be able to get total gross value added for about 14,735 million UAH. It is foreseen by the classical forecasting methods. Instead, the second management strategy will lead to better results (18,176 million UAH) than after the optimistic quadratic trend itself. Exceeding of GVA will be 46% above the linear trend and 11% over quadratic one. The third strategy appeared to be the most effective. Exceeding of GVA is 63% and 23% accordingly. In comparison to the strategy #2 the goal function increasing is 11%.

Figure 3 presents the comparison of GVA growing dynamics accordingly to 2 trend models and 3 developed strategies. As it can be seen from figures, strategy #1 isn't effective because during 4 years the GVA value is below the benchmark forecast. For strategies #2 and #3 it can be seen that despite the substantial difference of these strategies during the first 4 years their total result was almost identical and was within the linear and quadratic trends. And only for the 5-th year a significant increase in GVA of all three strategies can be observed. Thus strategy planning allows accumulating "internal potential energy" of the system during the first 4 years. This makes it possible to create a stable economic foundation for the further sharp increase in economic performance. Moreover the strategic management for 5 years shows 11% better results than the annual strategy management.

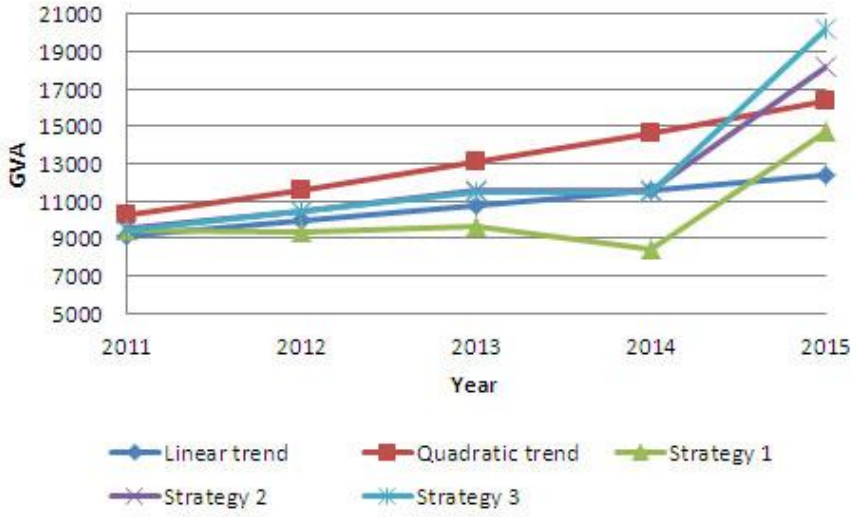


Fig.3 The GVA dynamics according to regional development strategies.

As it is shown in the Table 6, to achieve the maximum effect for the GVA output increase it is necessary to classify them into three groups according to EAK rates and proportions:

Group 1 includes education, construction and agriculture which require a sustained annual dynamic development within the entire billing period.

Group 2 includes trade and repair of motor vehicles, public administration which require a special care as for the development rate during the first four years; manufacturing and healthcare – during the first three years. These are specific pulses for the self-development of the system in the future.

Group 3 of EAK includes transport, communications, real estate, leasing, engineering, and providing services to businessmen. This group is not nominating in modeling the development strategy.

5 CONCLUSIONS

A new method of modeling a regional strategic management based on the Soft Computing is constructed. Unlike classical approaches, which use mainly an expert analysis, it allows maximizing an economic impact and conduct a quantitative analysis of the proposed strategy.

On the example of the selected region it was proved that the present economic system is not self-organized and it requires an efficient public management. If the regional management strategy is not optimally chosen then in the system some uncontrolled fluctuations can be observed, that may lead to an economic crisis and the "collapse" of the economy system.

Mathematical models of optimization of strategies building of 3 types have been constructed and their effectiveness has been quantitatively researched. It is proved, that the dynamic management strategy with the maximizing of the objective function at the end of the period under investigation, turned out to be the most effective. It is established that public administration which is based on a scientifically grounded quantitative approach, using advanced mathematical models of Soft Computing, allows building a strong economic foundation, which will be the basis for a further rapid growth of the regional economy.

Unlike the current practice it is proposed to complete an expert approach to prioritizing strategies in socio-economic development of regions with some objective quantitative methods.

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Received for publication: 31.01.2014
Revision received: 08.06.2014
Accepted for publication: 23.06.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Vyklyuk, Y., & Yevdokymenko, V. (2014, 07 15). New methods of soft computing in regional development strategy formation. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 274-284. doi:10.12709/mest.02.02.02.28

*Style – **Chicago** Fifteenth Edition:*

Vyklyuk, Yaroslav, and Valeriy Yevdokymenko. 2014. "New methods of soft computing in regional development strategy formation." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 274-284. doi:10.12709/mest.02.02.02.28.

*Style – **GOST** Name Sort:*

Vyklyuk Yaroslav and Yevdokymenko Valeriy New methods of soft computing in regional development strategy formation [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 274-284.

*Style – **Harvard** Anglia:*

Vyklyuk, Y. & Yevdokymenko, V., 2014. New methods of soft computing in regional development strategy formation. *MEST Journal,* 15 07, 2(2), pp. 274-284.

Style – **ISO 690** Numerical Reference:

New methods of soft computing in regional development strategy formation. **Vyklyuk, Yaroslav and Yevdokymenko, Valeriy.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 274-284.

MEST Journal
DOI 10.12709/mest.02.02.02.29

ANALYTICAL METHODS FOR COMMERCIAL WEB CONTENT PROCESSING OF INFORMATION RESOURCE IN ELECTRONIC BUSINESS SYSTEMS

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JEL category: D84, L86

Abstract

The given article is devoted to the development of standardized analytical methods and software for Web content processing in e-business systems. The model of electronic content commerce systems is developed. The models of commercial Web content processing subsystems are constructed. A new approach of business processes application and implementation for the construction of electronic content commerce systems is formulated. Complex methods of formation, management and support commercial Web content are developed. Software for information resources processing in electronic content commerce systems is developed. The methods of e-business systems designing and implementation are presented as example on online newspaper and online magazine that reflect the theoretical studies results.

Keywords: *content, web content, information resource, business process, online newspaper, online magazine, e-commerce systems, e-business.*

1 INTRODUCTION

Active development of the Internet promotes the growth of needs in the operative reception of data for e-business conducting. It also facilitates the implementation of new forms of information services through appropriate systems and information resources (Berko, Vysotska, & Pasichnyk, 2009), (Jerk, 2001), (Uspensky, 2001). Commercial Web content is documented and according formatted unique data. They are prepared to meet the needs of information resources users (Berko, Vysotska, & Pasichnyk, 2009), (Ermakov, & Kiselev, 2005), (Pasichnyk, Scherbyna, Vysotska, & Shestakevych, 2012), (Vysotska, & Chyrun, 2011). The characteristic feature of e-business systems is an opportunity to information resources processing. This increases the goods sales volume of regular user, the active

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involvement of potential users and expanding the boundaries of the target audience (Jerk, 2001), (Evdokimov, 2007). The e-business principles and technology are used actively in the creation of electronic content commerce systems for on-line/off-line sales and Web content analysis/exchange/saving, online shop, cloud storage/computing, etc. (Ermakov, & Kiselev, 2005), (Ivanov, & Krukovskaya, 2004), (Ivanov, 2002), (Ivanov, 1994), (Clifton, 2009). The problems of design, development, implementation and maintenance of electronic content commerce systems are actual theme in view of factors such as: active development of research in the e-business area, the theoretical justification lack of standardized methods, and the need for software unification of information resources processing (Ivanov, & Krukovskaya, 2004), (Ivanov, 2002), (Clifton, 2009), (Korneev, Hareev, Vasyutyn, & Reich, 2000), (Krupnik, 2002). There are new approaches and solutions to this problem. But there is a mismatch between the known methods and means of commercial content processing and principles of e-commerce systems construction. There are the lacks of general approaches of e-commerce systems creation and standardized methods for commercial Web content processing in these systems.

2 RECENT RESEARCH AND PUBLICATIONS ANALYSIS

Practical factor of commercial Web content processing in e-business systems is closely linked with the problems addressing of the content amounts growth in the Internet, rapid prevalence of accessibility to the Internet, active development of e-business, expanding set of information products and services, growth of demand for information products and services, the technology and tools creation, and areas expanding of methods application for information resources processing. In this direction are actively working leading global manufacturers of commercial content resources means. In particular, such systems are developed: for on-line content selling of online newspapers (New York Times, Washington Post), online journals (Wall Street Journal, Chip), distance learning (Ashford University), Internet publication as a dictionaries/directories (Oxford English Dictionary Online), Internet publishing (Online Publishers Association), portals of entertaining (tochka.net), informative (Weather Channel, Karpaty.ua) and children (teremoc.ru, vshkolu.com) content; for off-line content selling of copywriting services (Textbroker, Sopywriting 911), Marketing Services Shop (The Copy Box, Local Internet Marketing), RSS Subscription Extension (Apple, Google, Intel, Microsoft); online shop for selling of eBooks, software, video, music, movies, picture, digital art, manuals, articles, certificates, forms, files, etc (Google, Amazon, Apple, Android, Opera, Yahoo!); for content saving on cloud storage and cloud computing (Google, Amazon, Apple, Micorsoft, Linux, iPhone, Android, Palm).

The theoretical factor of information resources processing in e-business systems is associated with the methods and tools development of commercial Web content formation, management and support. In scientific studies D. Lande studied and developed mathematical models of electronic information flow (Bolshakova, Lande, Noskov, Klyshynskyy, Peskova, & Yahunova, 2011), (Braychevskyy, & Lande, 2005), (Grigoriev, & Lande, 2005), (Lande, Furashev, Braychevskyy, & Hryhorev, 2006), (Lande, 2005-2006), (Lande, & Braychevskyy, 2005-2006), (Lande, & Litvin, 2001), (Lande, & Morozov, 2004-2005), (Lande, & Furashev, 2006), (Lande, Furashev, Braychevskyy, & Hryhorev, 2006), (Lande, Furashev , & Grigor'yev, 2006), (Furashev, Lande, Grigor'yev , & Furashev, 2005), (Furashev, Lande, & Brajchevskiy, 2005). G. Zipf proposed an empirical regularity of words frequency distribution in natural language (Zipf 1935, 1949). G. Salton and R. Papka have proposed new events detection in the content flow (Salton, 1979), (Papka, 1999). B. Boiko, S. McKeever, A. Rockley, G. McGovern, J. Hackos, R. Nakano, B. Doyle, Halverson have described a model of the commercial content lifecycle in the works (Boiko, 2005), (Doyle, 2005), (Hackos, 2002), (Halverson, 2009), (McGovern, & Norton, 2001), (McKeever, 2003), (Nakano, 2002), (Rockley, & Cooper, 2002), (Stone, 2003), (Vysotska, & Chyrun, 2011). In works (Pasichnyk, Scherbyna, Vysotska, & Shestakevych, 2012), (Soroka, & Tanatar, 1998), (Fedorchuk, 2005) have developed the content analysis methodology launched. EMC, IBM, Microsoft Alfresco, Open Text, Oracle and SAP a Content Management Interoperability Services specification for Web-services Berko, Vysotska, & Pasichnyk, 2009). They have designed to provide interaction between subsystems of commercial Web content processing in e-business systems. Interoperable Content Application Tools interacts

with content from different repositories via a service interface and special superstructure as Content Management Interoperability Services Implementation.

3 PROBLEMS EXTRACTION

The number of Web content streams in e-business systems is greater than the path of goods movement in the industry. Considerable part of content flow in electronic business systems consists of easily formalized and automated procedures. The main problem is the lack of a common approach to process of e-business systems modeling, design and development for the rapid processing of commercial content.

Model of e-business system is given as

$$S = \langle X, Q, C, V, H, Function, T, Z, Y \rangle, \qquad (1)$$

where:

- $X = \{x_1, x_2 \ldots, x_{n_X}\}$ – content set from various sources;
- $Q = \{q_1, q_2 \ldots, q_{n_Q}\}$ – set of information users requests;
- $C = \{c_1, c_2 \ldots, c_{n_C}\}$ – commercial Web content set;
- $V = \{v_1, v_2 \ldots, v_{n_V}\}$ – set of content support conditions;
- $H = \{h_1, h_2 \ldots, h_{n_H}\}$ – the conditions set of content formation and management,
- $Z = \{z_1, z_2 \ldots, z_{n_Z}\}$ – the components set of an information resource,
- $T = \{t_1, t_2 \ldots, t_{n_T}\}$ – transaction time of content processing,
- $Y = \{y_1, y_2 \ldots y_{n_Y}\}$ – statistics data set of system operation,
- $Function$ – the operator of the output data formation in the system (Berko, Vysotska, & Pasichnyk, 2009), (Sovetov, & Yakovlev, 1998).

The process of the e-business system S operation (1) is described by the operator as:

$$y_j(t_p + \Delta t) = Function(x_i, q_d, c_r, v_l, h_k, t_p, z_w) \quad (2)$$

where x_i – visitors/users requests to the e-business system. Value y_j is described as:

$$y_j = \{a_1, a_2, \ldots, a_g\}$$

where

- a_1 – visits number over a time period Δt,
- a_2 – the average time spent on an information resource (min : c) for a time period Δt,
- a_3 – a refusals indicator (%) for a period time Δt,
- a_4 – achieved purpose of commercial content finding,
- a_5 – the dynamics of commercial content lifecycle (%),
- a_6 – the total number of page views for a time period Δt,
- a_7 – the number of page views per visit,
- a_8 – new visits,
- a_9 – absolute unique visitors,
- a_{10} – traffic sources (direct referrals, referrals from search engines, referrals from other sites, etc.) in % etc. (Clifton, 2009).

The value influences x_i, q_d, c_r, v_l, h_k on z_w, and y_j value as a result of the e-business system operation are unknown and unexplored. The model does not reveal relationships between the input data, commercial Web content, the original data and the information resources processing in e-business system S from (1). This substantiates the purpose, relevance, appropriateness and research directions of the commercial content processing in e-business systems. It is necessary to solve the problems of the Web content formation, management and support as components of the information resources processing in e-business systems in the form of theory-based concept.

4 GOALS FORMULATION

The aim of this work is to expand the functionality and the efficiency improving of e-business systems. This is achieved by system attendance increasing through the use of standardized methods and software for commercial Web content processing. The purpose is identified by the need to the following tasks solving:

- models creation of e-business systems to the shortcomings determine of existing methods and tools for commercial Web content processing;

- standardized methods development of commercial Web content processing for the architecture designing of e-business systems;
- a generalized architecture development of e-business system and formated stages implementation of the commercial Web content lifecycle;
- software implementation for commercial Web content processing in e-business systems (for the time and costs reducing on commercial content formation, management and support) by the quality increasing of information resources processing.

5 OBTAINED SCIENTIFIC RESULTS ANALYSIS

The main stages of the commercial Web content processing in e-business systems is the content formation, management and support with the following links: *Web content* → *Web content formation* → *database* → *Web content management* → *information resource* or *user request* → *Web content management* → *information resource* → *Web content support* → *database*, i.e. due to (2) as

$$Function = Formation \cup Management \cup Support \quad (3)$$

where $Function$ – the operator of the output data formation in the system, $Formation$ – the operator of the Web content formation, $Management$ – operator of Web content management, $Support$ – operator of Web content support.

Due to (1) and (3) the model of e-business system is presented as

$$S = \left\langle \begin{matrix} X, Q, Formation, H, C, V, \\ Management, Support, Z, T, Y \end{matrix} \right\rangle \quad (4)$$

where X – Web content set from various sources, Q – set of user queries, $Formation$ – the operator of the content formation, H – the conditions set of Web content formation and management, C – set of commercial Web content, V – the conditions set the content support and external influences on the system, $Management$ – Web content management operator, $Support$ – Web content support operator, Z – the components set of an information resource, T – transaction time of information resources processing, Y – statistical data set of the system operation.

Phase of commercial Web content formation is described by the operator $Formation$ as follows

$$c_r = Formation(u_f, x_i, t_p) \quad (5)$$

where u_f – conditions set of commercial Web content formation, ie. $u_f = \{u_1(x_i), \ldots, u_{n_U}(x_i)\}$.

Commercial Web content is presented as follows:

$$c_r = \left\{ \bigcup_f u_f \left| \begin{matrix} (x_i \in X) \wedge (\exists u_f \in U), \\ U = U_{x_i} \vee U_{\overline{x_i}}, i = \overline{1,m}, f = \overline{1,n} \end{matrix} \right. \right\} \quad (6)$$

Stage of commercial Web content managing is described by the operator $Management$ as follows

$$z_w = Management(q_d, c_r, h_k, t_p) \quad (7)$$

where Q – set of information users requests, H – set of commercial Web content management conditions, ie. $H = \{h_1(c_{i+1}, q_d), \ldots, h_{n_H}(c_{i+n_H}, q_d)\}$.

Commercial Web content management is presented as

$$z_w = \left\{ \bigcup_{k=1}^{n_H} h_k(c_{i+1}, q_d) \left| \begin{matrix} (c_{i+k} \in C) \wedge (q_d \in Q) \wedge \\ \wedge (h_k \in H_q), \\ H = H_{q_d} \vee H_{\overline{q_d}}, i = \overline{1,n_C}, \\ d = \overline{1,n_Q}, k = \overline{1,n_H} \end{matrix} \right. \right\} \quad (8)$$

Stage of commercial Web content support is described by the operator $Support$ as follows

$$y(t_p + \Delta t) = Support(v_l, h_k, c_r, z_w, t_p, \Delta t) \quad (9)$$

where v_l – conditions set of commercial Web content support and the environment impact on the system, i.e.

$$v_l = (v_1(q_i, h_k, c_r, z_w, t_p), \ldots, v_{n_V}(q_i, h_k, c_r, z_w, t_p))$$

Output data are implemented

$$y_j = \left\{ \bigcup_l v_l \left| \begin{matrix} (\exists q_d \in Q) \wedge (\exists z_w \in Z) \wedge \\ \wedge (\forall v_l \in V) \wedge (\forall (c_r \wedge q_d) \in h_k), \\ V = V_{q_d} \vee V_{\overline{q_d}}, d = \overline{1,n_Q}, l = \overline{1,n_V}, \\ w = \overline{1,n_Z}, r = \overline{1,n_C}, k = \overline{1,n_H} \end{matrix} \right. \right\} \quad (10)$$

A complete functional electronic business system is characterized a complex system of interrelated operations, methods and techniques of commercial Web content processing. This is shown in Fig. 1.

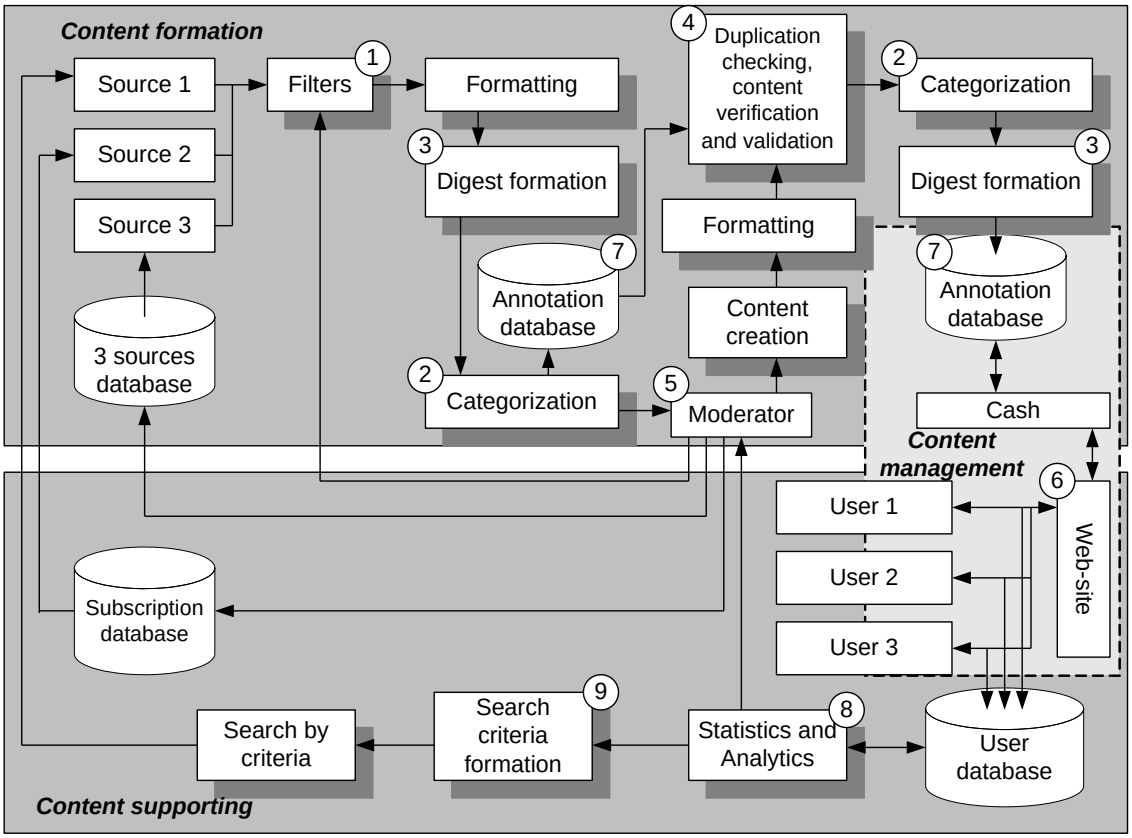


Fig. 1. Methods of commercial Web content processing in e-business systems

6 METHOD OF COMMERCIAL WEB CONTENT FORMING

The commercial Web content formation for an information resource provides communication between inputs data set from different sources and generated content set that is stored in the appropriate database of e-business systems, i.e.:

$$Source(x_i) \to x_i \to X \to Formation(u_f, x_i, t_p) \to c_r \to C \to DataBase(C),$$

where:

- $Source(x_i)$ – the x_i content source,
- x_i – the *i*-th content from data source,
- X – content set from corresponding sources of data,
- $Formation(u_f, x_i, t_p)$ – the operator of the commercial content formation at x_i at fixed time t_p at the conditions u_f, c_r – formed under conditions u_f of *r*-th commercial content,
- C – a set of commercial content,
- $DataBase(C)$ – database of commercial Web content.

Model of commercial Web content formation is presented as

$$Formation = \left\langle \begin{matrix} X, Gathering, Formatting, \\ KeyWords, Backup, \\ Caterization, BuDigest, \\ Dissemination, T, C \end{matrix} \right\rangle \quad (11)$$

where:

- X – set of input data $x_i \in X$ from different information resources or moderators;
- $Gathering$ – operator of content collecting/creating from various sources;
- $Formatting$ – content formatting operator; $KeyWords$ – the operator of content keywords and concepts identification;
- $Caterization$ – the operator of automatic categorization of content;
- $Backup$ – the operator of content duplication identification;

- $BuDigest$ – the operator of the content digest formation;
- $Dissemination$ – operator of selective distribution of Web content;
- T – the transaction time of $t_p \in T$ the content formation;
- C – a Web content set $c_r \in C$.

The optimal solution can help navigate in the dynamic input data from different sources. This optimal solution provide the process of information gathering from the sources and its fragments distribution according to the users' needs $C = Gathering(X, U_G, T)$, where:

- X – content set from different sources of data;
- U_G – a conditions set of data gathering from a different sources;
- $Gathering$ – the operator of content gathering/creation;
- T – the content gathering/creation time.

Content duplication identification is described by the operator

$$C = Backup(Gathering(X, U_G, T), U_B) \quad (12)$$

where:

- X – content set from different sources of data,
- U_B – conditions set content duplication identification,
- $Backup$ – the operator of content duplication identification,
- C – a content set.

Content duplication identification in the e-business systems implements linguistic statistical methods of the general terms searching, which form chain of a verbal signatures in content.

Content syndicate is in data gathering programs training of structural features at individual sources (with information resources, by moderators, users, visitors, journalists, and/or editors), direct scanning of commercial content and his addiction to a common XML format:

$$C = Formatting(Backup(Gathering(X, U_G, T), U_B), U_{FR}) \quad (13)$$

where:

- $Formatting$ – the operator of content formatting,
- U_{FR} – a conditions set of commercial content formatting.

The content set processing C for meaningful keywords identification is based on the principles of the keywords finding in content (terms). This is based on Zipf's law and reduced to the words choice wich an average frequency of appearance (the most used words are ignored by stop-dictionary using and rare words from messages text not included). The keywords and concepts identification are defined by the operator:

$$C = KeyWords(Formatting(Backup(Gathering(X, U_G, T), U_B), U_{FR}), U_K) \quad (14)$$

where:

U_K – conditions set of key words and concepts identification. Commercial Web content classification and distribution implement through a information retrieval system of selective content distribution (the containing router). Content is analyzed for categorization operator by the operator

$$C_{Ct} = Categorization(KeyWords(C, U_K), U_{Ct}) \quad (15)$$

for compliance with thematic requests, where:

- $Categorization$ – operator of content categorization according to the detected keywords,
- U_{Ct} – a conditions set of an automatic categorization,
- C_{Ct} – set of classified relevant content.

The digest set C_D form depends of $C_D = BuDigest(C_{Ct}, U_D)$,

where:

- $BuDigest$ – the digest formation operator
- U_D – conditions set of digest formation, i.e.

$$C_D = BuDigest(Categorization(KeyWords(C, U_K), U_{Ct}), U_D) \quad (16)$$

Relevant content is send to users and are loaded into the database. Selective distribution of commercial content is described by operator

$$C_{Ds} = Dissemination(C_D, U_{Ds}) \quad (17)$$

7 METHOD OF COMMERCIAL WEB CONTENT MANAGEMENT

The process of commercial Web content management is presented by this general scheme of links:

$$User(q_d) \to q_d \to Q \to H(c_{i+1}, q_d) \to$$
$$Management(q_d, c_r, h_k, t_p) \to z_w \to User(z_w)$$

Methods for commercial content management is divided into different classes according to the model of pages generating of information resources in e-business systems.

1. Model of commercial Web content management such as pages generating by the user requests is presented as

$$Management_Q = \left\langle \begin{matrix} H, C, Q, Presentation, \\ Edit, Weight, T, Z \end{matrix} \right\rangle \quad (18)$$

where:

- C – Web content set,
- Z – set of generated pages on information resource,
- Q – a set of user queries,
- $Presentation$ – the operator page formulation and presentation on information resource,
- $Edit$ – operator of content editing and modification,
- $Weight$ – the weight of the content block, T – transaction time of commercial Web content management,
- H – a conditions set of commercial content management.

Step of content editing and modification is presented by the operator $c_j(t_{r+1} + \Delta t) = Edit(c_j(t_r), t_{r+1}, \Delta t)$ Stage of pages set forming is described by operator:

$$Z(t_r + \Delta t) = Presentation(q_i, C, Weight(C), t_r, \Delta t)$$

where:

- $Weight(C)$ – the total weight of content block on information resource, i.e.

$$z_i = \left\{ \begin{matrix} \bigcup c_j(q_i, t_r) \Big| (\forall c_j \in C_q) \wedge (\exists q_i \in C_q) \wedge \\ \wedge Weight(C_q), \\ C = C_q \vee C_{\bar{q}}, j = \overline{1,m}, i = \overline{1,n} \end{matrix} \right\} \quad (19)$$

2. Model of pages generation while the information resource editing in the system is presented as

$$Management_E = \langle C, H, Edit, Weight, T, Z \rangle \quad (20)$$

where:

- C – Web content set,
- H – conditions set of content management,
- Z – static pages set of information resource,
- $Weight$ – the weight of the Web content block,
- $Edit$ – operator of Web content editing/updating.

Phase of pages formation is described operator

$$Z(t) = Edit(C, Weight, H, t) \quad (21)$$

3. Model of mixed management of commercial content is presented as

$$Management_M = \left\langle \begin{matrix} C, Q, H, Presentation, \\ Edit, Weight, Caching, T, Z \end{matrix} \right\rangle \quad (22)$$

where:

- C –content set,
- Z – generated pages set of information resource,
- Q – the set of user queries,
- H – the set of content management conditions,
- $Presentation$ – the operator of page formulation and presentation on information resource,
- $Edit$ – operator of content editing and modification,
- $Caching$ – the operator of the cache or information content blocks formation where the cache is presented as

$$Cache = Caching(C, Weight, t, \Delta t) \quad (23)$$

or

$$Cache = Caching(Z, Weight, t, \Delta t) \quad (24)$$

i.e.

$$Cache = \left\{ \bigcup c_i \left| \begin{matrix} (\forall c_i \in C) \wedge Weight(c_i), \\ t = t + \Delta t, i = \overline{1,n} \end{matrix} \right. \right\} \quad (25)$$

$$Cache = \left\{ \bigcup z_i \left| \begin{array}{l} (\exists z_i \in Z) \wedge (\forall c_j \in C) \wedge \\ \wedge Weight(c_j) \wedge (\forall c_j \in z_i), \\ t = t + \Delta t, i = \overline{1,n} \end{array} \right. \right\} \quad (26)$$

8 METHOD OF COMMERCIAL WEB CONTENT SUPPORTING

Process of commercial Web content support is presented as follows scheme links

$$User(q_d, z_w) \rightarrow q_d \rightarrow z_w \rightarrow V(q_d, z_w, t_p) \rightarrow Support(v_l, h_k, c_r, z_w, t_p, \Delta t) \rightarrow y_j \rightarrow Moderator(y_j).$$

The method of commercial Web content support looks like

$$Support = \left\langle \begin{array}{l} Q, C, H, V, T, BuInfPort, \\ IdThemTop, ConCorrTablConc, \\ CalRankConc, Z, Y \end{array} \right\rangle \quad (27)$$

where:

- Q – set of user queries,
- C – the Web content set,
- $BuInfPort$ – the operator of the information portraits formation,
- $IdThemTop$ – the operator of thematic storyline identification,
- $ConCorrTablConc$ – operator content relationship tables building,
- $CalRankConc$ – the operator of content ratings calculation,
- H – set of internal parameters in the system,
- V – the parameters set of the external environment,
- Z – page set of information resource,
- T – set of transaction time for information resources processing,
- Y – set of statistical data of the system operation.

An analysis result of the S e-business systems S functioning and C commercial Web content support has formed set $Y = \{Y_P, Y_T, Y_C, Y_R\}$ under the conditions $V = \{V_P, V_T, V_C, V_R\}$,

where:

- $Y_P = Y_{Pc} \vee Y_{Pq}$ – a subset of the information portraits of Y_{Pc} content and Y_{Pq} users,
- Y_T – a subset of thematic storyline of content,
- Y_C – subset of content relationship tables,
- Y_R – a subset of the ratings content,
- $V_P = V_{Pc} \vee V_{Pq}$ – the conditions set of information portraits formation,
- V_T – a conditions set for thematic storyline identification,
- V_C – the conditions set of the content relationship construct tables,
- V_R –the parameters set of the content ratings calculation.

The information portraits set Y_{Pc} of content, presented as $Y_{Pc} = BuInfPort(V_{Pc}, C, H, Q, T)$, and Y_{Pq} set of the users' portraits are given as:

$$Y_{Pq} = BuInfPort(V_{Pq}, Q, H, Z, T) \quad (28)$$

where:

- $V_P = V_{Pc} \vee V_{Pq}$ – set of the portraits formation conditions,
- $BuInfPort$ – the operator of the portraits formation as $Y_P = Y_{Pc} \vee Y_{Pq}$.

The thematic storyline set for the Y_T content is presented as

$$Y_T = IdThemTop(C, H, Q, V_T, T) \quad (29)$$

where:

- V_T – conditions set for content storyline identification,
- $IdThemTop$ – the operator of Y_T thematic storyline definition.

The Y_C set of relationship content tables is presented as $Y_C = ConCorrTablConc(C, V_c, T)$, where:

- V_C –the conditions set of the relationship tables building,
- $ConCorrTablConc$ – tables constructing operator.

The Y_{Rc} set of the content ratings is presented as:

$$Y_{Rc} = CalRankConc(C, Q, H, Y_C, V_{Rc}, Spam, Tonality, T) \quad (30)$$

and a Y_{Pq} set of a moderators ratings is presented as

$$Y_{Rm} = CalRankConc(C, Q, H, Y_C, V_{Rm}, T) \quad (31)$$

where:

- $V_R = V_{Rc} \vee V_{Rm}$ – the parameters set for the content ratings calculation,
- $Tonality(Q^+, Q^0, Q^-, T, H)$ – the tonality criteria for commercial content,
- $Spam(Q, T)$ – operator of comments filtering definition,
- $CalRankConc$ – operator of content and moderators ratings identification $Y_R = Y_{Rc} \vee Y_{Rm}$.

The Y set of output statistical data is presented as

$$Y = \{Y_P, Y_T, Y_C, Y_R\} = \\ = Support(V, C, Q, H, Z, T, \Delta T) \quad (32)$$

$$Y = \{Y_P, Y_T, Y_C, Y_R\} = \\ = Support(V_P, V_T, V_C, V_R, C, Q, H, Z, T, \Delta T) \quad (33)$$

where:

- $Y_P = Y_{Pc} \vee Y_{Pq}$ – the information portraits subset of content and users,
- Y_T – a subset of the thematic storyline in content,
- Y_C – a subset of content relationship tables,
- $Y_R = Y_{Rc} \vee Y_{Rm}$ – a subset of the content and moderators ratings,
- $Support$ – operator of content support.

The obtained data taken into account when an information resource creation or updating and the architecture improvement of e-business systems. Actuality of subsystem development for commercial content processing consists in the necessity obtain operational/objective assessment of the competition level in the financial market segment of commercial content, assess the competition level and their competitiveness degree in the financial market with the content distribution. Table. 1 lists the developed systems with the lifecycle support for commercial content.

Table 1. Subsystems of commercial content processing in the developed e-business systems

№	Information Resource Name	System Appointment	Address	Subsystem availability		
				Formation	Manage-ment	Support
1	Fotoghalereja-vysocjkykh	Online shop	fotoghalereja-vysocjkykh.com	+/–	+	+/–
2	Vgolos	Online Newspaper	vgolos.com.ua	+	+	+
3	Tatjana	Online Newspaper	tatjana.in.ua	–	+/–	+/–
4	Presstime	Online Newspaper	presstime.com.ua	+/–	+	+
5	AutoChip	Online shop	autochip.vn.ua	–	+	+/–
6	Kursyvalyut	Online Journal	kursyvalyut.com	+	+	–
7	Good morning, accountant!	Online Newspaper	dobryjranok.com	+	+	+/–
8	Victana	Online Journal	victana.lviv.ua	+/–	+/–	+/–
9	Information for Businesses	Online Journal	goodmorningua.com	–	–	–

There are developed software for commercial Web content formation, management and support. There are posted software of developed systems implementation with subsystems of information resources processing in e-business organization over the Online Newspaper and Online Journal.

Table 2. The results of systems operation in the time period from 10.2010 to 03.2013

Characteristics	***The developed e-business systems***								
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	***9***
Visiting	4144	5997052	646	3654456	7838	9124	8724	517	25
Visits time	4:50	2:14	6:22	2:04	1:58	1:30	2:27	8:38	8:12
Failures/refusals	55.62	71.90	47.5	83.08	54.45	82.76	68.15	35.8	48.0
Goal Conversion	4.35	0.00	0.00	0.00	10.97	0.00	0.00	0.00	0.00
Unique visitors	2674	2501402	256	1501202	5704	7632	4996	250	7
Repeat visits	1470	3495641	393	2153254	2134	1500	3728	267	18
Page-views	19082	11588861	2924	11588861	20828	16952	18892	3760	81
Pages/visit	4.60	1.93	4.51	1.67	2.66	1.86	2.17	7.27	3.24
% New Visits	64.48	41.68	39.3	39.88	72.75	83.56	57.23	47.9	28.0
New Visitor	64.53	41.71	39.5	34.76	72.77	83.58	57.27	48.4	28.0
Returning Visit	35.47	58.29	60.5	65.24	27.23	16.42	42.73	51.6	72.0
Search traffic	56.47	36.10	32.5	26.12	69.67	79.68	24.34	23.0	20.0
Direct Traffic	19.50	11.20	38.5	31.22	17.15	14.17	48.73	32.9	80.0
Transitions (%)	24.03	52.48	28.97	42.46	13.18	6.15	26.94	44.10	0.00
Language – RU	45.15	55.57	33.90	43.54	66.87	54.39	69.01	49.7	52.0
Language – EN	36.20	23.70	57.3	33.34	10.23	25.51	10.49	39.3	48.0
Ukraine	81.25	91.22	83.9	87.56	67.17	66.01	89.47	87.8	60.0
Russia	9.10	1.84	6.78	4.67	24.04	5.57	0.62	0.39	0.00
Poland	0.19	0.29	0.01	0.12	0.11	0.61	0.11	0.19	0.00
United States	1.21	0.66	0.01	0.32	0.01	0.57	0.07	0.01	0.00
Germany	0.34	0.32	0.15	0.11	0.20	0.26	0.08	0.01	0.00
City – Kyiv	17.25	23.62	29.1	25.45	20.09	22.86	36.16	28.4	48.0
City – L'viv	38.92	43.41	48.4	34.54	10.17	14.43	9.70	45.1	12.0
Dnipropetrovsk	2.82	2.72	0.00	0.45	3.22	2.51	6.63	1.35	0.01
City – Kharkiv	1.50	2.82	0.62	0.65	3.56	1.65	6.08	1.16	0.01
City – Ternopil	2.24	0.01	0.01	0.01	0.01	2.17	0.01	0.01	0.01

Table 2 shows the comparative results characteristics of the developed e-business systems operation over the time period 10-11.2012. Statistical data is obtained from Google Analytics, which provides advanced features for data analysis. Google Analytics is a free service for visits maintenance to Web-sites. It allows us to estimate the information resources traffic in e-business systems and the effectiveness of marketing activities, such as for Online Newspaper and Online Journal. Fig. 2-3 present the work results of the developed systems in the form of graphs. So the all stages presence of the commercial content lifecycle significantly increases the visits and unique users amount of information resources in e-business systems.

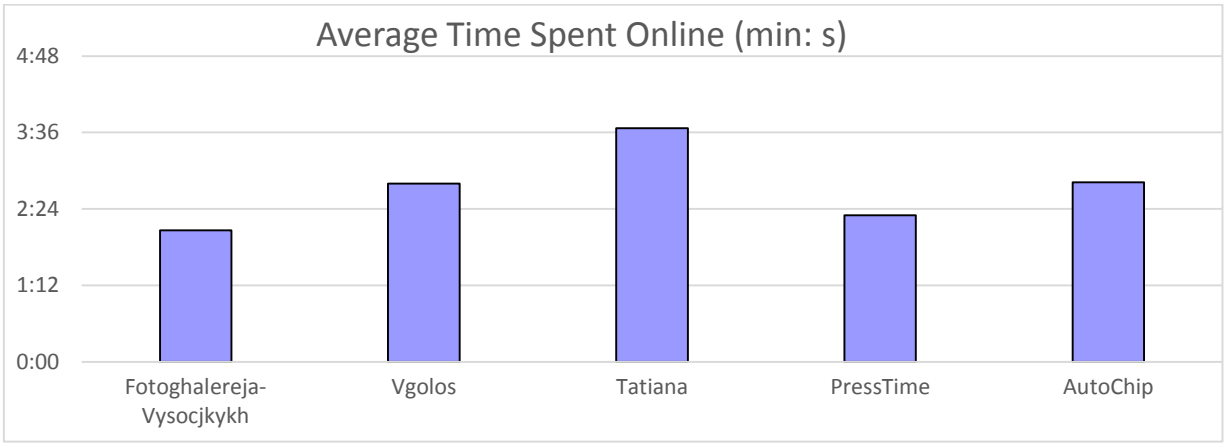


Fig. 2a. Distribution of time of arrival at the site

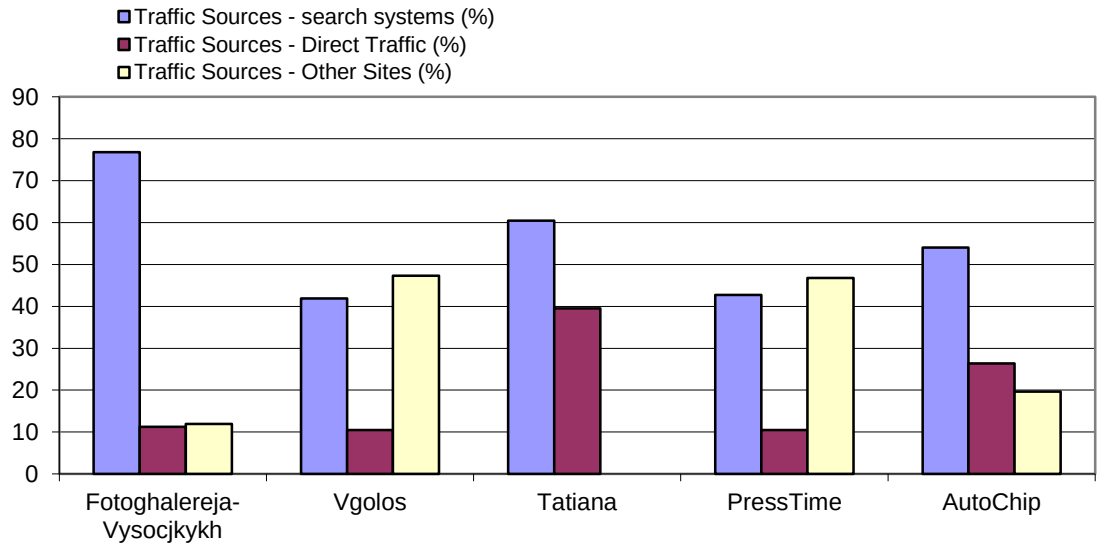


Fig. 2b. Distribution of traffic

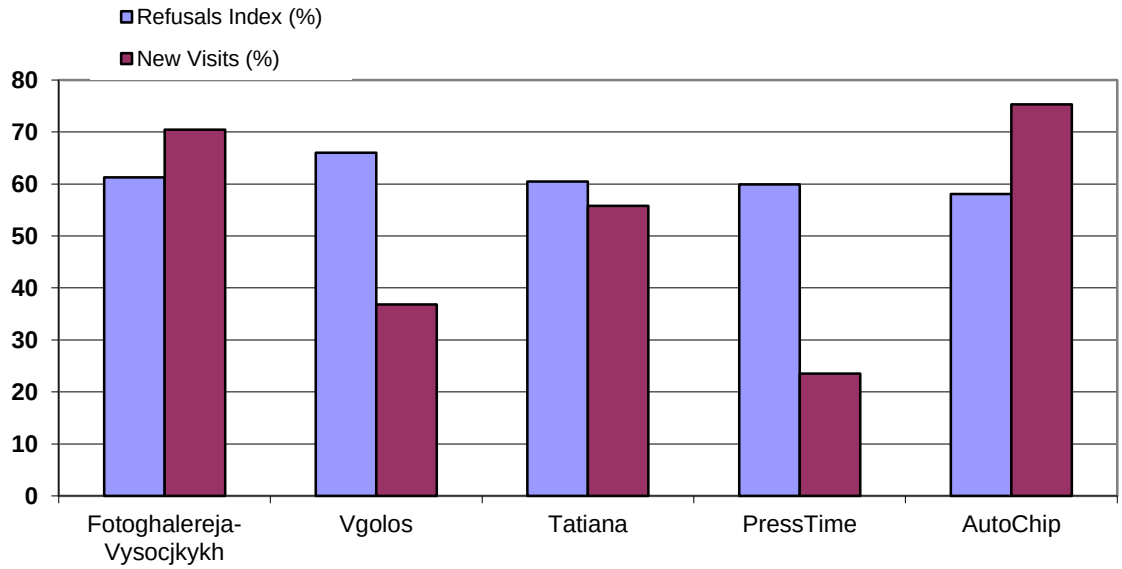


Fig. 3a. Distribution of new visits and failures

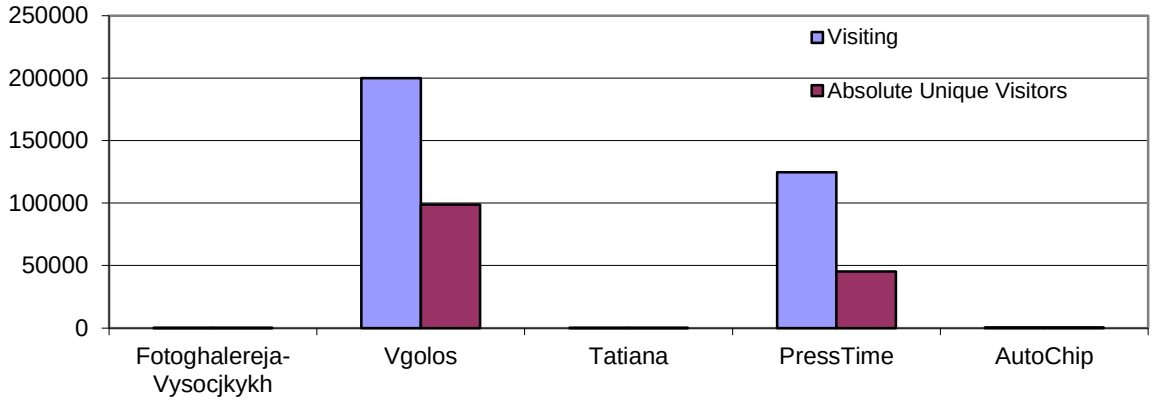
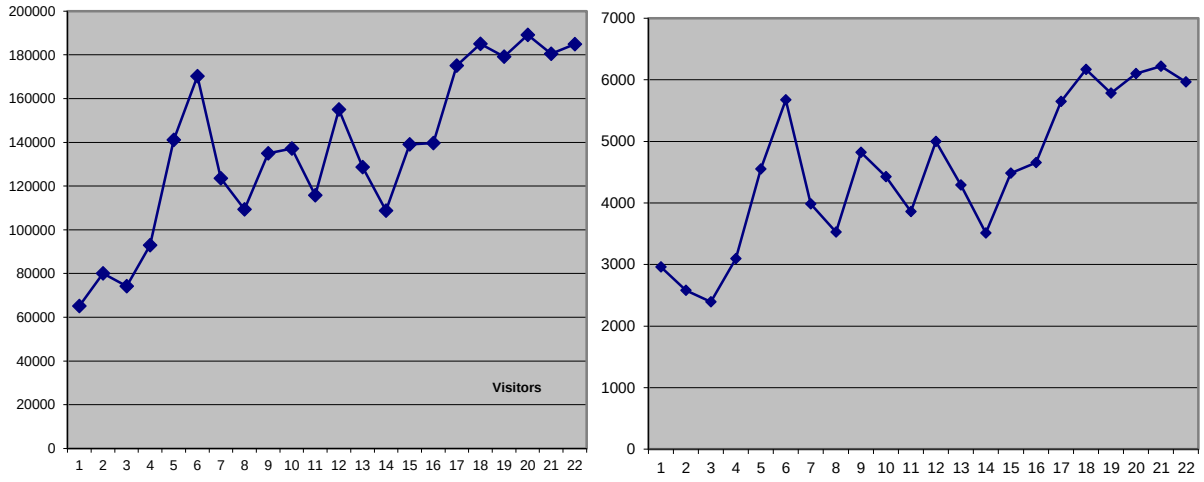


Fig. 3b. Distribution of information resources visiting

Service for accesses counting of information resource allows us to estimate the information resource traffic and marketing activities efficiency, such as for the Online Newspaper Vgolos (Fig. 4).



a) *b)*

Fig. 4. a) Overall and b) the average number of visitors for years 2010-2012

The subsystems presence of commercial Web content creation, management and support in e-business systems increases the number of unique visitors, viewed pages, visiting time and information resources, the target and regional audiences increasing.

The subsystem of Web content formation is implemented as a content-monitoring complex for content gathering from different sources of data which provides a content database creation according to the information needs of users. As a gathering and primary processing result of content is reduced to a single format, classified according to the specified categories. And he is credited descriptors with keywords. This facilitates the process implementation of content management.

Tasks of Web content management subsystem are: database formation, rotation and providing access to it; the operational and retrospective databases formation; the user experience personalization; personal user queries and sources storing; operation statistics analysis; search providing in database; initial forms generation on information resources; information interaction with other databases; the an information resource formation. Commercial Web content management subsystem is implemented through caching (representation module generates a page once; then it is several times faster loaded from the cache, which is updated automatically after a certain period of time or when making changes to specific sections of an information resource, or manually by administrator command) or information blocks formation (blocks

conservation in the information resources editing stage and page collection from these blocks at the user request of the relevant page).

Web content support subsystem provides information portraits formation, thematic storyline identification in content flows, the content relationship tables building, content rankings calculation, new events identification in their content flows, their tracking and clustering.

9 CONCLUSIONS

In this paper the actual scientific problem of methods and means research and development for commercial Web content processing in e-business systems by using the developed mathematical software for the appropriate systems creation is solved. It is substantiated by the necessity of methods and means development for the content processing in e-business systems by the system architecture improving to the processes automate of the content formation, management and support. In the work is analysed e-business terminology for determination of their characteristic patterns, trends, process of e-business systems design and simulation and the shortcomings of existing methods and tools for content processing. E-business system model is developed, which helped to develop the commercial content lifecycle, the generalized system architecture and standardized methods for content processing in these systems. Overall system architecture for e-business systems is improved, which is different from the existing architectures of availability of commercial content processing modules. This enabled the stage implementation of the content lifecycle.

In this paper a complex methods of commercial Web content formation, management and support to achieve the work effect at the developer level (the time and costs reducing for development, quality improvement through the use of proven solutions) is developed. The general guidelines for the architecture designing of e-business systems is developed, which different from the existing systems more detailed steps and the presence of commercial Web content processing modules They allow effectively implement an information resources processing at the developer level of e-business systems (the time and resources reducing to the development, the quality improvement of ebusiness systems operation). In this work the modules architecture of e-business systems for the stages implementation of the commercial Web content lifecycle is developed. A software application of commercial Web content formation, management and support to achieve the effect of work at the level of the owner (profitability increasing, user interest growing) and user (clarity, the interface simplification standardization, unification, choice expanding) of e-business systems is developed and implemented.

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Received for publication: 14.04.2014
Revision received: 17.06.2014
Accepted for publication: 03.07.2014

How to cite this article?

*Style – **APA** Sixth Edition*

Vysotska, V., & Chyrun, L. (2014, 07 15). Analitical methods for commercial web content processing of information resources in electronic business systems. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 285-299. doi:10.12709/mest.02.02.02.29

*Style – **Chicago** Fifteenth Edition:*

Vysotska, Victoria, and Lyubomyr Chyrun. 2014. "Analitical methods for commercial web content processing of information resources in electronic business systems." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2 (2): 285-299. doi:10.12709/mest.02.02.02.29.

*Style – **GOST** Name Sort:*

Vysotska Victoria and Chyrun Lyubomyr Analitical methods for commercial web content processing of information resources in electronic business systems [Journal] // MEST Journal / ed. Čekerevac Zoran. - Belgrade : MESTE, 07 15, 2014. - 2 : Vol. 2. - pp. 285-299.

*Style – **Harvard** Anglia:*

Vysotska, V. & Chyrun, L., 2014. Analitical methods for commercial web content processing of information resources in electronic business systems. *MEST Journal,* 15 07, 2(2), pp. 285-299.

Style – **ISO 690** Numerical Reference:

Analitical methods for commercial web content processing of information resources in electronic business systems. **Vysotska, Victoria and Chyrun, Lyubomyr.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 285-299.

MEST Journal
DOI 10.12709/mest.02.02.02.30

BOOK REVIEW OF STEVEN PINKER'S: "THE BETTER ANGELS OF OUR NATURE: WHY VIOLENCE HAS DECLINED" – Part III –

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Category: **Book review**

Editor's note: *This article is too large to fit into any one of our issues. But, due to its importance, we have decided to run it as a three part series. The first of these (doi:10.12709/mest.01.01.02.04) featured the introduction, the beginnings of Block's critique of Pinker (2011) and the appendix. Part II (doi:10.12709/mest.02.02.01.15) contained most of the main body of this work. And the last appearance of this essay in three parts, presented here, contains the author's conclusion and his voluminous bibliography.*

III. CONCLUSION

States Pinker (538): "In many parts of this book I have credited the Leviathan – a government with a monopoly on the legitimate use of force – as a major reducer of violence. Feuding and anarchy go together." Yes, indeed. That very well sums up the thesis of this book. But China and Chile, Mexico and Mauritania, Australia and Albania all live in a state of anarchy with each other. They have never engaged in and "feuding" with each other.

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I have, mostly, condemned this book. Let me end on a more positive note. I greatly enjoyed reading *The Better Angels of our Nature*. I read it three times. Once, just for the pleasure of it. Second, in order to criticize it, and a third time for pure enjoyment once again. Pinker tackles controversial issues. His words fairly leap off the page at you. He makes hundreds of positive contributions to our understanding of the human condition.[125] My only complaint is that he draws an erroneous and monstrous conclusion from them: democratic statism is a force for good.

However, I shall not be deterred from ending on a positive note. Here are some of the insightful,

[125] Read the book for yourself and see!

courageous statements that most attract me to this book: (43): "Anthropologists who did not get with the (Margaret Mead) program found themselves barred from the territories in which they had worked, denounced in manifestoes by their professional societies, slapped with libel lawsuits and even accused of genocide." Shades of climategate, here.

Here is another (614):

> "In fact the evidence for recent selection, if it applies to genes with effects on cognition and emotion, would license a far more radical form of evolutionary psychology, one in which minds have been biologically shaped by recent environments in addition to ancient ones. And it could have the incendiary implication that aboriginal and immigrant populations are less biologically adapted to the demands of modern life than populations that have lived in literate state societies for millennia. The fact that a hypothesis is politically uncomfortable does not mean that it is false."

Incendiary? Yes. Therefore, courageous.

Here is yet another brilliant insight from Pinker (696, footnote deleted):

> "To review the history of violence is to be repeatedly astounded by the cruelty and waste of it all, and at times to be overcome with anger, disgust, and immeasurable sadness. I know that behind the graphs there is a young man who feels a stab of pain and watches the life drain slowly out of him, knowing he has been robbed of decades of existence. There is a victim of torture whose contents of consciousness have been replaced by unbearable agony, leaving room only for the desire that consciousness itself should cease. There is a woman who has learned that her husband, her father, and her brothers lie dead in a ditch, and who will soon 'fall into the hand of hot and forcing violation.' It would be terrible enough if these ordeals befell one person, or ten, or a hundred. But the numbers are not in the hundreds, or the thousands, or even the millions, but in the hundreds of millions — an order of magnitude that the mind staggers to comprehend, with deepening horror as it comes to realize just how much suffering has been inflicted by the naked ape upon its own kind."

No man who could write this inspirational message can be impervious to the philosophy of libertarianism. It is my fervent hope that Pinker, and all those inspired by him, will read this review and be led by it leave off their genuflections to statolatry and embrace libertarianism, yes, the anarcho capitalist version of this philosophy.

This review has been far longer than what would have been needed to refute Pinker's two main theses, that violence has decreased, due to democratic government. Why? It is because I regard this book as one of the best defenders of statism, statolatry,[126] ever written. As an intellectual opponent of this institution, I wanted not only to confront these two main contentions, but also its author's other "progressive" views, which lead to, support, are part of, that same pernicious philosophy.

[126] A new type of superstition has got hold of people's minds, the worship of the state. People demand the exercise of the methods of coercion and compulsion, of violence and threat. Woe to anybody who does not bend his knee to the fashionable idols! -- Ludwig von Mises, *Omnipotent Government*, p. 11; The worship of the state is the worship of force. There is no more dangerous menace to civilization than a government of incompetent, corrupt, or vile men. The worst evils which mankind ever had to endure were inflicted by bad governments. -- Ludwig von Mises, *Omnipotent Government*, p. 47; The state is a human institution, not a superhuman being. He who says state means coercion and compulsion. He who says: There should be a law concerning this matter, means: The armed men of the government should force people to do what they do not want to do, or not to do what they like. He who says: This law should be better enforced, means: the police should force people to obey this law. He who says: The state is God, deifies arms and prisons. -- Ludwig von Mises, *Omnipotent Government*, p. 47; He who proclaims the godliness of the State and the infallibility of its priests, the bureaucrats, is considered as an impartial student of the social sciences. -- Ludwig von Mises, *Planned Chaos*, p. 16

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Received for publication: 23.02.2013
Accepted for publication: 29.03.2013

How to cite this article:

Style - **APA** Sixth Edition

Block, W. E. (2014, 07 15). Book review of Steven Pinker's: "The better angels of our nature: Why violence has declined" - Part III. (Z. Čekerevac, Ed.) *MEST Journal, 2*(2), 300-320. doi:10.12709/mest.02.02.02.30

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Block, Walter E. "Book review of Steven Pinker's: "The better angels of our nature: Why violence has declined" - Part III." Edited by Zoran Čekerevac. *MEST Journal* (MESTE) 2, no. 2 (07 2014): 300-320. doi:10.12709/mest.02.02.02.30

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Block, W. E., 2014. Book review of Steven Pinker's: "The better angels of our nature: Why violence has declined" - Part III. *MEST Journal,* 15 07, 2(2), pp. 300-320.

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Book review of Steven Pinker's: "The better angels of our nature: Why violence has declined" - Part III. **Block, Walter E.** [ed.] Zoran Čekerevac. 2, Belgrade : MESTE, 07 15, 2014, MEST Journal, Vol. 2, pp. 300-320. ISSN 2334-7058 (Online); ISSN 2334-7171.

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ISSN 2334-7058

DOI 10.12709/issn.2334-7058