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Content:

PAPER TITLE	PAGE No.
EUROPEAN SOCIAL WELFARE MODELS IN THE CONTEXT OF NEW PUBLIC MANAGEMENT - Leszek Zelek;	1 - 10
THE METHODS OF RESEACH OF EDUCATIONAL INEQUALITY DINAMICS - Anna Firsova, Olga Chelnokova, Alla Vavilina;	11 - 17
LITIGATE OR NOT TO LITIGATE? –SIMILARITIES BETWEEN VISEGRAD COUNTRIES - Kohlhoffer – Mizser Csilla;	18 - 28
METHODS OF PROJECTS' FINANCING ANALYSIS ON CROWDFUNDING PLATFORM - Galina Chernyshova, Anna Firsova, Alla Vavilina;	29 - 38
IMPLEMENTATION OF AUDIT TASKS IN THE CONTEXT OF CORPORATE GOVERNANCE OF TRANSITIONAL COUNTRIES - Sonja Tomash–Miskin, Jelena Vitomir, Bogdan Laban, Dragana Popovic, Vera Popovic;	39 - 44
HIGHER EDUCATION INSTITUTIONS IMPACT ON THE REGIONAL INNOVATIVE DEVELOPMENT - Anna Firsova, Elena Ogurtsova;	45 - 54
DEVELOPING AUDIT FUNCTIONS IN TRANSITION COUNTRIES AS PART OF IMPROVING THE MANAGEMENT AND FUNCTIONING OF ENTERPRISES - Jelena Vitomir, Sonja Tomash–Miskin, Bogdan Laban, Vera Popovic, Dragana Popovic;	55 - 61

EUROPEAN SOCIAL WELFARE MODELS IN THE CONTEXT OF NEW PUBLIC MANAGEMENT

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Abstract: *The aim of the paper is to investigate to what extent New Public Management reforms impacted the shape of European social welfare models. Based on review of the literature, social welfare models functioning in the different regions of Europe were presented with respect to New Public Management reforms. The main part of the paper describes social welfare models and the concept of New Public Management in different groups of countries. The paper is a supplement to the knowledge on the subject addressed in it. The author concludes that the countries analysed reacted in a different way and on a different scale to changes in public management, which impacted the shape of European social welfare models.*

Key words: *New Public Management, social welfare.*

1. INTRODUCTION:

In the 1970s, Western European countries witnessed a wave of criticism of how public policy was conducted and public services were provided, resulting in the formulation of new solutions aimed at improving management and effectiveness. Therefore, it was proposed that public provision of services should rely on the techniques applied in the private sector (Dixon 1998, p. 164-187). The reforms initiated at that time are referred to as New Public Management (NPM). The market-oriented reforms are assumed to have started when M. Thatcher took over as British Prime Minister¹ (1979 – 1990) (Birkinshaw, Olszewski, Popowska 1997, p. 60; Prager 1993, p. 75) and R. Reagan became the President of the United States (1980 -1988) (Laurence 2005, p. 2). The reformations they initiated were continued by their successors, i.e. Prime Minister J. Major in Great Britain and the administrations of G.W. Busha (Laurence 2005, p. 3) and B. Clintona in the United States (Pollit, Bouchaert 2004, p. 11). The idea behind the creation and development of the concept of NPM was to improve the functioning of the public sector. It became necessary to rationalise public expenditure by implementing instruments characteristic of management in private sector organisations, i.e. privatisation, management through goals, emphasis on the management of finances: effectiveness and cost accounting, setting targets and monitoring the performance, defining standards of services (ibidem, p.11) and using benchmarking solutions². A global financial

¹ Margaret Thatcher introduced Compulsory Competitive Tendering into the system, now changed by the Labour Party into Best Value system. *Competitive Tendering* is also characteristic of the American and Canadian government agencies.

² A method of management involving a systematic comparison of an enterprise with its competitors or leading companies in a particular industry, and copying of tried and tested practices (processes, methods, ways of operating).

and economic crisis forced most European countries to consider steps that should be taken to lower public expenditure with a view to reducing public deficit and debt. In most Western European countries, the role of the state was consolidated as a provider of public services and a welfare state (Alonso, Clifton, Díaz-Fuentes 2011, p. 3). The pioneers in the implementation of the new principles were Anglo-Saxon countries: the United States (Lynn 2008), Great Britain (Burnham, Horton 2013), followed by countries of the British Commonwealth: New Zealand (Chapman, Duncan 2013, p. 87-96), Canada (Aucoin 1995) and Australia (Johnston 2000), and later countries in the continental Europe: Scandinavia (Green 2002, p. 271 – 294). The success of the public administration reform carried out in these countries initiated similar changes in highly developed European countries, which later spread to developing countries of Central Eastern Europe. Although the implementation of new public management in the different countries followed different scenarios, the common denominator was the fact that the changes took place in all segments of public administration and at all levels.

In parallel to developing the concept of New Public Management, social welfare systems were created, but they developed differently in the individual countries due to differences in the level of economic development, intra-state relations and social and cultural traditions. The public sector reforms also covered services in the sphere of social policy, which have been modernised in Western European countries over the last 30 years through economisation of social welfare systems, which involved, according to the concept of NPM, privatisation and/or marketisation, as well as inclusion of the private sector in the delivery of social services (Drakeford 2000, p. 18-19). In many countries the reform was possible, because it suited post-Fordist (Pęciak 2014, p. 171) organisation of production and consumption best. The era of Fordism (ibidem, p. 171) was characterised by mass consumption and production, with the same packages of services offered to everybody. Meanwhile, the advocates of post-Fordism maintain that the times of a powerful bureaucracy producing unified services to everybody are over. As P. Hoggett put it: *We are living in an era of post-bureaucratic forms of providing social benefits* (Hoggett 1991, p. 247). Advocates of privatisation emphasise that privatisation redefines the state's social functions, undertaken actions and objectives, and reorganises the relationships between social institutions and groups of aid beneficiaries (Johnson 2013, p. 371-375).

2. NEW PUBLIC MANAGEMENT

In the light of the above, the paper compares European models of social welfare systems according to the typology by G. Esping-Andersen against selected NPM instruments addressing the role of the state in delivery of social policy and provision of services. Below is classification of NPM instruments (Frederickson 2015; Van Dooren, Bouckaert, Halligan 2015; Gruening 1998; Schedler 2002; Ferlie 1996; Ormond 1998).

Tab. 1. Classification of selected instruments of New Public Management

Instrument category	Instrument
1. Political decentralisation	Delegating tasks to lower level organisational units Distributing tasks to non-public sectors
2. Separating politics from administration	Establishing executive agencies The institution of a "city manager"
3. Privatisation	• Use of varied methods of privatisation
4. Improvement of public services provision	Contracting public services (contracting outside of the public sector and within the public sector) Coupons Introducing mechanisms of public participation in management of services Development of quasi-markets
5. Customer-orientation	Analysing the opinions of the recipients of services and taking them into account in management processes Facilities for customers to offices (e.g. customer service bureaus, improvement of information about the services provided by offices) E-government - online access to administration services Popularisation of information about public services among citizens

Source: Own work based on: (Frederickson 2015; Van Dooren, Bouckaert, Halligan 2015; Gruening 1998; Schedler, Pröeller 2002; Ferlie 1996, Ormond 1998).

Political decentralisation, separation of politics from administration, privatisation, improvement of the provision of public services and customer-orientation are NPM instruments that constitute the starting point in a discussion that aims to assess whether the social welfare models functioning in the different groups of countries comply with the assumptions of the concept of NPM. The selection of instruments in accordance with the above-presented classification directly shows whether a given model fulfils the requirements of the concept of NPM. The first three instruments refer to institutions and the system, whereas the remaining two are connected with provision of services and their recipients.

3. EUROPEAN SOCIAL WELFARE MODELS

One of the main goals adopted by the European Commission in the document *Strategy Europe 2020* is to reduce poverty and social exclusion by at least 20 million people living in poverty and affected by social exclusion or likely to find themselves in such a situation (Brussels, 3.3.2010, KOM(2010) 2020, p. 5). For each member state to be able to adapt *Strategy Europe 2020* to its specific situation, the European Commission proposes that these measurable EU goals are translated into domestic goals and methods of operation. The document points out that the increasing ageing of populations is becoming a problem across Europe. As the baby boomers retired, the number of those actively participating in the labour market started to decrease in the EU starting from 2013/2014. A smaller number of people actively participating in the labour market and an increase in the number of pensioners will mean a significant burden on EU's social welfare systems.

The report: *Efficiency and Effectiveness of Social Spending. Commission Staff Working Document* (KE, 2008a) presents the direction of social policy reforms in terms of social spending. Point 5 of the document reads: *It is recommended to implement public administration reforms, change the ways in which the staff in offices are managed, and increase the extent of the use of information and communications technologies.*

There are two approaches to social policy systems. First, they can refer to the actual policies implemented in various countries. Second, they can be created in isolation from practical solutions, representing logical constructs of desirable or viable strategies of social policy (Książkowski, 1998). The first approach is dominant in the literature. References to welfare states are more prevalent than the term *social policy systems*. In addition, *social policy* and *welfare state* are used interchangeably.

Analysis of social policy studies revealed a dozen or so classifications presenting various systems of welfare policy delivery. Based on the review of the literature, the most important classifications were created by: Richard Titmuss (Titmuss 1974); Norman Furniss and Dorothy Tilton (Furniss, Tilton 1977); Gøst Esping-Andersen (Esping-Andersen 1990). The concept by Gøsta Esping-Andersen distinguished social policy regimes applied in the different regions of Europe (Esping-Andersen 2007): liberal regime, conservative-corporatist regime, mediterranean regime, social-democratic regime, post-Communist regime.

The concept by Esping-Andersen has remained the most important typology of social policies to this day. And his typology according to welfare state regimes³ is treated as the starting point in discussions about social welfare systems in countries across Europe (Książkowski 2012, p. 14-16). G. Esping-Andersen distinguished the following social welfare models, referred to as regimes: (Danforth 2014; Szarfenberg 2009; Hoekstra 2003; Esping-Andersen 1990; Esping-Andersen 1999; Esping-Andersen 1985);

- **liberal regime (Anglo-Saxon)** – the state decides to step in mainly through social benefits granted to low-income citizens. This regime is also called "marginal strategy" and is based on the theory that the best methods for meeting human needs are a well-functioning market and family support, while the state should play a marginal role in this respect. Liberalism in social policy is characteristic of Great Britain and Ireland;

- **conservative-corporatist regime** is when the state makes the amount of social benefits dependent on an individual's status in the labour market; an individual is regarded as able to meet his/her needs, but he/she is suggested certain formal solutions designed to ensure social security, e.g. paying public social security contributions (Valeyeva, Christen, Smorchkov 2011, p. 17). It drew on the social system of the 19th century Germany under

³ A welfare state *is a state* that aims to protect its citizens from the risks related to the mechanisms of the market economy, in particular the risk of losing a job, health, as well as the risk related to old age; also a set of public institutions that provide social benefits and services to citizens. The concept of a welfare state was fully established after WWII (especially in the 1970s to 1980s). It assumed: 1) in the economic sphere – the state's interference in the economy, mainly to prevent negative social phenomena such as unemployment; 2) in the sphere of social life - expansion of the system of social benefits and services; 3) in the sphere of political system - democracy; implementation of these assumptions should enable the achievement of universal welfare while retaining private ownership of the means of production; a welfare state should ensure a compromise between the interests of employers and employees, and keep balance between economic growth and the ideals of fair distribution of goods. Supporters of a welfare state include social democrats, social liberals and some representatives of leftist Christian democratic factions. The ideas of a welfare state can only be implemented in countries with a high level of economic development. They are a result of a political compromise that allows the elites of the authorities to reform the capitalistic market economy without destroying its vitality.

Otto von Bismarck (Wielicka 2014, p. 493). This concept functions, among others, in France, Germany, Belgium and Austria;

- **mediterranean regime** refers to countries that are called "elementary" welfare states. Their constitutions contain a promise of creating a modern welfare state, but the constitutional provisions are not supported by legal, institutional or social framework. Thus, a "welfare state" is merely an institutionalised promise (Minas, Jacobson, Antoniou 2014, p. 135-149). They include: Italy, Spain, Portugal and Greece. This social welfare system is the least developed. In the literature it is referred to as a model of Latin strip countries, elementary model, southern European model or Catholic model due to the significant role of the Catholic Church in the above-mentioned countries in charitable and welfare activities (Culfaz 2016, p. 9).

- **social-democratic regime** is based on two assumptions. According to the first assumption, social problems arise from the "system" and the society is not to be blamed for them. The state is responsible for the situation of citizens and their families, as well as for providing forms of assistance (Normann, Rønning, Nrøgaard 2013, p. 21). Granting benefits does not depend on employment, earned income, the amount of social security contributions or the likes (Triacca, Wissink, Gomez Garcia, *et al.*, 2015, p. 56). This type of social policy is also characterised by a very complex system of public services for the elderly, sick, families with kids, etc. (Heath 2011, p. 33-36). The social-democratic regime is present in: Sweden, Norway, Finland, Holland and Denmark;

- **post-Communist regime** refers to countries from the former Eastern bloc and shows characteristics typical of the socialist system. The countries that underwent system transformations after 1989 had to replace state ownership, centrally planned economy and autocracy in governing by private ownership, free market and democratic system of governing respectively (Cerami 2008, p. 5). These countries show certain elements of a conservative welfare state and the liberal concept, but they still have ingrained characteristics of a socialist system - in some sectors, central management and uniform organisational structure can still be found (Esping-Andersen 2007, p. 3). The countries where this regime is identified include: Bulgaria, the Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Slovakia and Slovenia⁴.

Tab. 2. Regimes of European social welfare models according to G. Esping – Andersen.

Regime	Description
liberal (Anglo-Saxon)	<ul style="list-style-type: none"> - well-functioning market and family support, - marginal role of the state, - the state only steps in when the market does not meet the requirements for ensuring minimum subsistence, - state aid is only provided on a temporary basis, - by definition, most citizens should be able to cope well in the conditions of the market economy, - state interference may have harmful effects leading to decreased work productivity and economic slow down.

⁴ Materials presented at: 3rd ESPAnet annual conference *Making Social Policy in the Postindustrial Age*, September 22-24, 2005, University of Fribourg, Switzerland and at the conference *Transformation of Social Policy in Europe: Patterns, Issues and Challenges for the EU-25 and Candidate Countries*, Department of Political Science and Public Administration METU, Ankara, Turkey, April 13-15, 2006.

conservative-corporatist regime	<ul style="list-style-type: none"> - permits the state's interference in the sphere of social policy, - highest benefits are received by public sector employees.
mediterranean regime	<ul style="list-style-type: none"> - elementary welfare state, - institutionalised promise of a modern welfare state, - limited engagement of the state in social welfare activities, - very generous benefits for some groups with other groups not secured sufficiently, - shift from corporate solutions to partial universalism, - special type of relationship between public and non-public entities in this sphere, - occurrence of the phenomenon of clientelism, - patronage system in the distribution of cash benefits in some spheres, - weakness of state institutions, - empowerment of political parties as main representatives of social interests.
social-democratic regime	<ul style="list-style-type: none"> - social problems arise from the "system", - the state is responsible for the situation of citizens and their families, as well as for providing forms of assistance, - questioning the thesis that the private market and family are able to meet all human needs at the level expected from the social point of view, - the highest degree of the state's interference in the social policy sphere, - high level of institutionalisation of social rights, - in the model, market criteria do not play any role in access to social welfare, - the state is responsible for social security of citizens.
post-Communist regime	<ul style="list-style-type: none"> - elements of a conservative welfare state and the liberal concept, - central management, - uniform organisational structure.

Source: Own work based on: (Culfaz 2016; Minas 2014; Danforth 2014; Valeyeva, Christen, Smorchkov 2011; Heath 2011; Szarfenberg 2009; Cerami 2008; Esping-Andersen 2007; Hoekstra 2003; Esping-Andersen 1990; Esping-Andersen 1999; Esping-Andersen 1985).

The above-presented social policy models functioning in European countries are supportive in character, and they are not fully reflected in the actual social policy of any country (Manov 2004, p. 2). Only the Anglo-Saxon system is effective and fair (Sapir 2006, p. 369-390), and fully complies with the assumptions of the NPM instruments presented in the paper. Great Britain and Ireland initiated NPM reforms in Europe, which were also implemented in these countries' social policies. Scandinavian countries have a social welfare system that ensures effectiveness but is not a response to the assumptions of the concept of NPM, as there is an excessive state interference in the system, too few tasks are delegated to the private sector, and the social welfare system lacks market mechanisms. Although Scandinavian countries were pioneers in the implementation of the concept of NPM, their reforms were not reflected in social welfare. The conservative-corporatist and Mediterranean models are not sufficiently effective and need reforming. They do not comply with the assumptions of the concept of NPM. The conservative-corporatist model permits the state's interference in the social welfare system while meeting the conditions of the free market economy, but it does not comply with the requirements of NPM. Countries representing these models of social policy implemented the concept of NPM to a very limited extent. One can even claim that the social welfare systems functioning in these countries contradict the concept of NPM. The post-Communist regime is present in young democracies undergoing political system transformation. Although according to the classification by G. Esping-

Andersen there are no links between this model and NPM, promising signs can be seen in terms of the prospect of implementing NPM into post-Communist social welfare model. It should be borne in mind that activation instruments represent only a part of a social policy (where employment policy and social security meet), and changes in this segment are not always visible if we look at the dynamics of the bigger picture.

4. CONCLUSION:

Social policy in Europe, despite differences between social welfare systems across different groups of European countries, aims to ensure social and territorial cohesion so that the benefits of economic growth and employment can be widely enjoyed, and the poor and socially excluded can live on a decent level and actively participate in the social life. Social policy in Europe undergoes fast and deep changes. It is thus necessary to define new directions of the development taking into account the changing socio-economic environment, which requires adaptation of the systems for management of institutions to the new conditions of the functioning of social welfare systems. Changes are necessary and unavoidable, and their implementation will largely depend on an efficient change of a social welfare management system based on the experience of Anglo-Saxon countries gained during reforms in the area of public management. The assertion that something is a new challenge to a social policy can be understood as a hypothesis that we are dealing with a new social problem and as a suggestion that it can be mitigated or solved by means of the existing or reformed social policy.

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THE METHODS OF RESEACH OF EDUCATIONAL INEQUALITY DINAMICS

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Abstract: *Studies of international organizations clearly indicate that the main expenditures on education are concentrated in a small number of the most developed countries. The socioeconomic differentiation of regions creates inequality in the possibilities of financing education and is becoming one of the most important restrictions on the development of education. The educational inequality of countries is typical for all countries of catch-up development. Assessment of the differentiation of various regions is an urgent task, since it contributes to the soundness of macroeconomic solutions for the development of innovation activities and the modernization of the country's economy. The educational space of Russia is extremely differentiated and a high degree of disproportion in the development of regions causes a decrease in the competitiveness of the country as a whole and its individual subjects. The article applies modern analysis of the problems of entropy and inequality on the empirical data of the Russian economy from 2009 to 2016. The analysis and modeling of the coefficients of Jinni, Lorenz, Tail is carried out. Based on the results of the analysis, a graphical interpretation of the inecuality of the high educational system was made. The directions of development of regional higher education systems should be aimed at expanding access to higher education and improving its quality will contribute to the transformation of the education system into a factor in the sustainable development.*

Key words: *Regional development, educational inequality, economic growth, regional higher education systems, education.*

1. INTRODUCTION: MULTIDIMENSIONAL PROBLEM OF INEQUALITY

Nowadays the world is experiencing extreme inequality. It especially typical of the catching-up countries. Annual loss caused by a high degree of regional differentiation amounts to 2-3% of GDP and leads to a decrease in the country's competitiveness in the context of the globalized world economy [1], [2], [3]. Strong disproportion in the regional development gives rise to decrease in country's competitiveness in general and in some federal entities. It is also the fact that one inequality causes the next one. Thus, educational inequality underlies both social and economic disparity. Educational expenditure is one of the

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most important figures of social development, indicating the degree of the government’s attention to the education of citizens [4]. Investment in education is not only an important way to increase the human capital of the nation and improve the prospects for economic development, but also to expand people’s mental horizons, as well as to ensure the possibility of personal fulfilment. Education also contributes to the people’s financial well-being and their healthy lifestyle.

The data analysis conducted by UNESCO testifies that the main parts of education expenditures are concentrated in several most advanced countries. For example, the USA with only 4% of the world’s population between 5 and 25 years of age accounts for more than a quarter of all world education spending. The United States spends on education as much as the six regions of the world collectively: Arab countries, Central and Eastern Europe, Central Asia, Latin America and the Caribbean, South and West Asia, and sub-Saharan Africa. However, sub-Saharan African governments spend only 2.4% of the world’s resources on education for 15% of the population between 5 and 25 years of age. The estimated education budget in such a country as France, Germany or Italy exceeds the cost of education in all sub-Saharan African countries. The education of heads of household in the EU and in Russia is the third most important factor of social and economic inequality (Fig. 1).

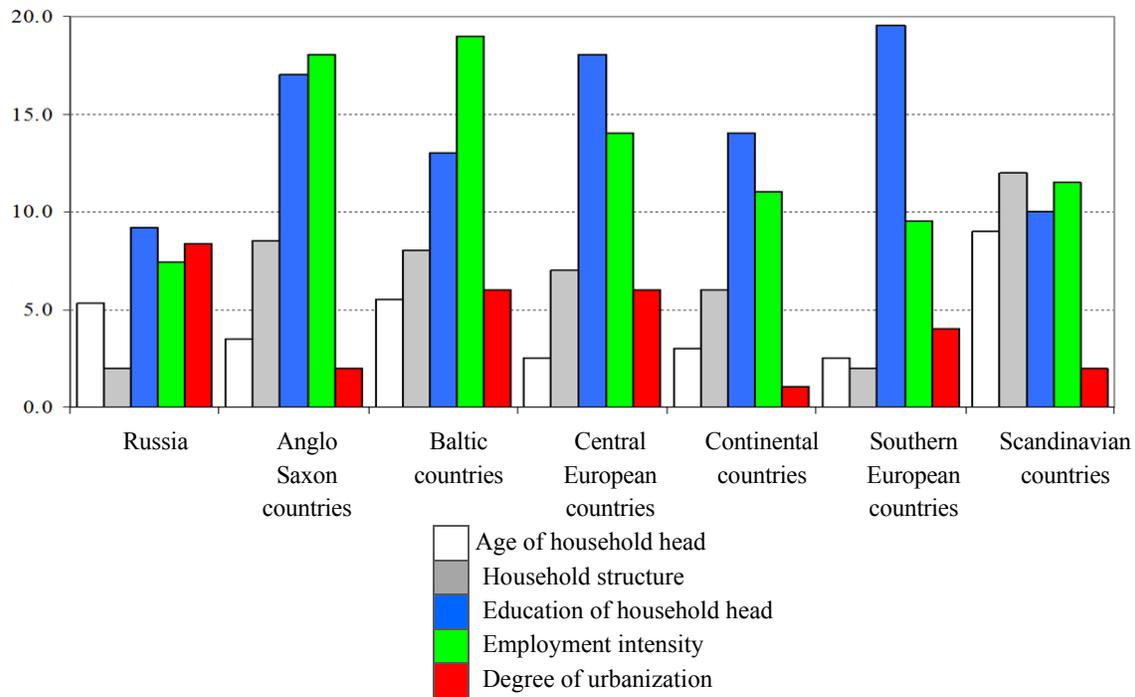


Fig.1. Inequality factors [3]

The greater importance of higher education in the economic development of countries and regions determines the relevance and necessity of studying the balanced development of regional systems of higher education and issues of differentiation in education depending on the socio-economic characteristics of the territory systems.

Heterogeneity and imbalance of the socio-economic space are constraining factors for its sustainable development. Socio-economic differentiation among territories gives rise to

inequality in opportunities for education financing, as it becomes one of the most important restrictions on the education development.

The aim of the article is to justify the method of research of educational inequality and to identify the dynamics and changes in the rate of regional educational inequality in the Russian Federation.

Its purpose is to analyze the educational inequality in terms of the number of students and the amount of funding for higher education systems in 80 regions of the Russian Federation for 2009-2013-2016.

The research uses the methods of economic and statistical analysis, calculates the Gini coefficient and Theil index to assess the rate of educational inequality in regional higher education systems. The information base of the research is the data from the Federal State Statistics Service of the Russian Federation, materials of the Monitoring of graduates' employment and the Ministry of Science and Higher Education of the Russian Federation for 2009-2016.

2. METHODOLOGY OF RESEARCH: INEQUALITY MEASUREMENT TOOLS

We have chosen to use the entropy indices as methodological approach to assess the rate of inequality in the functioning of regional higher education.

To analyze the level of educational inequality, we use the classical tools of measuring and analyzing inequality, this is the Gini coefficient. This is a statistical indicator of the degree of stratification of society relative to any economic feature (annual income, property, real estate); in our case, we analyzed the number of students and the revenues of regional systems of high education as a amount of money spent on higher educational organizations in the regions of Russia. The coefficient shows the deviation of the actual distribution of the indicator from its absolutely equal distribution among all groups (in our case, between regions) and allows one to very accurately assess the uneven distribution of income in a society.

Gini coefficient is calculated by the formula [5]:

$$G = \left| 1 - \sum_{k=2}^n (X_k - X_{k-1})(Y_k + Y_{k-1}) \right|$$

were:

X_k and Y_k are the shares of the regions, ranked by the number of students and the corresponding share of funding that they receive;

n is the number of regions that have their share in the indicators of the higher education system.

The Gini coefficient ranges from 0 to 1. Moreover, the more its value deviates from zero and approaches one, the more the inequality.

The Lorentz Curve is manifested a graphic representation of the share of total income per each group of regions. The diagonal on the graph corresponds to the “line of absolute equality”, when all regions have the same indicators.

The Theil index is another indicator for measuring inequality and entropy [6]:

$$E_1 = \frac{1}{n} \sum_{i=1}^n \left(\frac{y_i}{\bar{y}} \right) \log \left(\frac{y_i}{\bar{y}} \right)$$

The advantage of this index is that it performs the decomposition axiom, that is, it can be clearly decomposed into intergroup and intragroup components, which in sum will be equal to the value of the aggregated index.

This index gives equal weights to observations throughout the distribution scale

The normalized entropy can be determined using the relative entropy coefficient as the ratio of the Theil index to its maximum value, which is $E_{\max} = \ln n$:

$$E_{\text{norm}} = \frac{E_1}{E_{\max}} = \frac{E_1}{\ln n}$$

This ratio will be a value from 0 to 1. Thus, on the basis of these coefficients and entropy measures, it is possible to construct an analytical indicator of the entropy and regional inequality for the higher education system in Russia.

If the financing of all regions is equal to each other, then Theil index = 0. If finances are fully concentrated in one region, then the Index is equal to its maximum value.

3. EMPIRICAL ANALYSIS: DOMINANT TRENDS IN REGIONAL HIGHER EDUCATION SYSTEMS

The current situation in the Russian education, like in many states in transition, confirms the dependence of education structure and functioning as a social institution on the socio-economic situation in the country. The educational and innovation space in Russia is extremely differentiated. The maximum number of people employed in research and development per 10 thousand people employed in the economy by regions of the Russian Federation more than 10 times exceeds the median one, and in terms of the innovative products and services (as well calculated per 10 thousand people employed in the economy) it exceeds almost 100 times. With the maximum figure of coverage by scientific personnel in different constituent entities of the Russian Federation amounting to 353.3 people per 10 thousand people employed in the economy (Moscow), the median is about only 32.4 people per 10 thousand employed in the economy.

The authors analyzed the transformation dynamics of the educational and innovation space in Russia, which demonstrates current intensive processes of reducing the accessibility of higher education and the “fading” of science in the provinces [7]. This causes certain problems for the spread of innovative impulses throughout the country and reduces the pace of economic development.

Reforms in education and the growing internal problems in the education system functioning in last decade led to a significant compression of the educational space through reducing educational infrastructure, a dramatic deterioration in the financial, material and technical capacities of most educational institutions, the loss of highly qualified teachers provoked by low wages in education, the intensification of teachers' work, etc.

We can witness the growing educational inequality and its changing nature. The high degree of disproportions in the regions development triggered a decrease in the country's competitiveness as a whole and its individual provinces, the heterogeneity and imbalance of the socio-economic space in Russia are the factors constraining its sustainable development. Due to the huge differences in the distribution of natural resources among the territories and the peculiarities of their geographic location, it may not be possible to achieve an economic

“levelling” of regional development. In this situation it is necessary to reduce the differences in human capital accumulation among the constituent subjects of the Russian Federation. The education space in Russia is also extremely differentiated. Funding per student differs more than 6 times according to the region of Russia (see fig. 3).

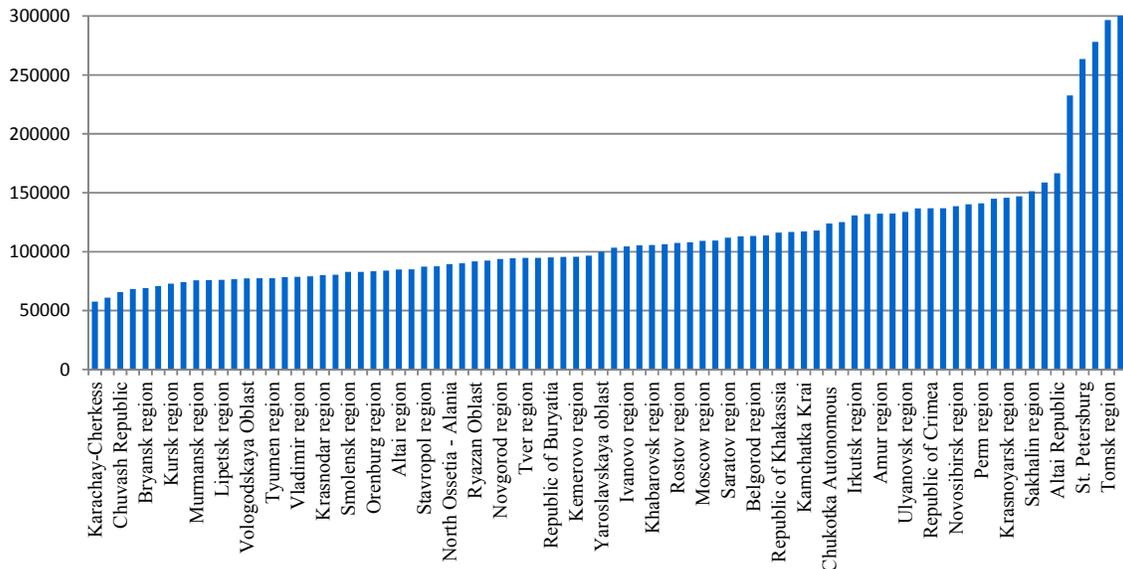


Fig. 2: Regional differentiation by revenue per student in 2017, rub. [8]

The concentration of financial and intellectual resources in the central regions will lead to even greater degradation of outlying regions; regional inequality will increase. Inequality in society and the economy is primarily reproduced through the education system. Regional inequality in the research activities and their effectiveness will exacerbate the inequality of regional innovative development.

The dynamics of the Gini coefficient and Lorenz curve are presented in the figures 3-4.

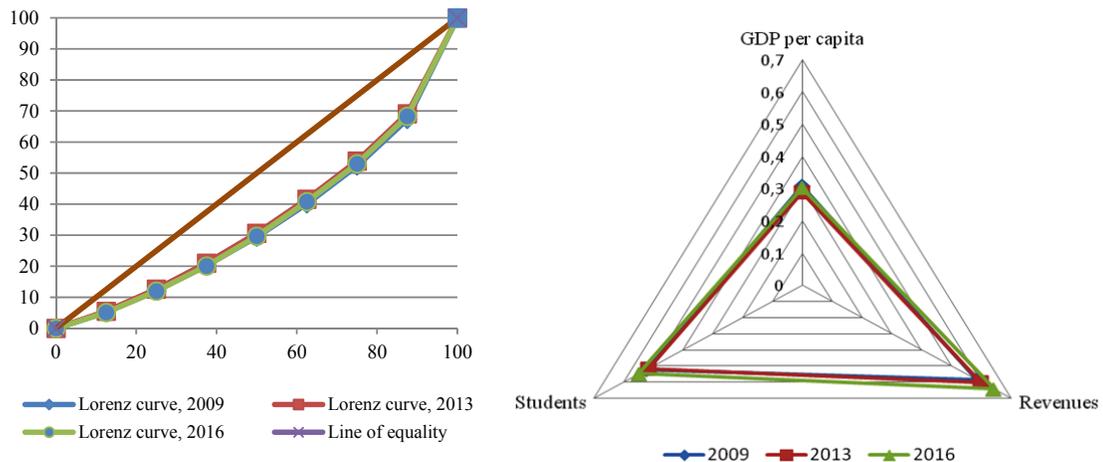


Fig. 3. Modelling of Lorenz curve and Gini coefficient for regional high education systems in 2009-2016

Table 1. Gini coefficient dynamics in 2009-2016

Indicators/Years	2009	2013	2016
GDP per capita	0,308	0,289	0,302
Students	0,522	0,514	0,547
Revenues	0,584	0,598	0,642

Table 2. Theil index for regional high education systems in 2009-2016

Indicators/Years	2009	2013	2016	Max. Theil index
Theil index	0,2136	0,1815	0,1837	4,382026635

However, contrary to our expectations, the change in the coefficients from 2009 to 2016 is insignificant, and we have not found any significant dynamics of educational inequality. It has slightly increased in recent years, but educational inequality is high. In economic theory, the optimal value of the Gini coefficient is 0.25-0.30. This value is typical, for example, for Scandinavian countries. In Russia, this indicator for higher education turned out to be significantly higher and amounts to 0.54 for students and 0.64 for revenues of regional systems of higher education. Moreover, inequality in education is higher than inequality in the distribution of GDP (0.30).

The dynamics of the Theil index shows the spatial interregional differentiation. According Theil index there is a decrease in educational inequality. The Theil index slightly decreased in the period under review from 0.21 to 0.18, which indicates a more uniform spatial distribution of higher education resources across regional educational systems.

4. CONCLUSION: NECESSITY TO OVERCOME INEQUALITY

To reduce educational inequality and improve the quality of education, it is necessary to form a set of measures designed to meet the characteristics of different groups of students and focus on reducing the inequality of educational opportunities.

However, modern educational policies of different countries do not always take into account the problem of inequality. We believe that conducting a similar diagnosis of the higher education system in a territorial context on an annual basis will determine the direction of the indicators dynamics of its inequality in education and will help reduce the imbalance in the higher education system and it is significant.

In conclusion, it should be noted that the issues of equality and efficiency are an eternal dilemma. If a country wants to grow faster, it should rely on growth points - territories with competitive advantages. But this increases the inequality within the country. If a country pursues a policy of equal territorial development, then it should take resources from the regions and transfer them to the weaker ones. In this case, the situation is equalized, but development slows down. Each nation opts to inequality or efficiency. This is a very difficult matter of political compromise. But expanding access to higher education and improving its quality will contribute to the development of the national economy, since they will turn the education system into a factor of the sustainable development for the economy. In the knowledge economy, science and education have an ever-increasing impact on economic development, especially in high tech and knowledge-intensive industries. The role of equal

opportunities for all community members and efficient higher education system in these conditions is currently regarded as one of the main factors influencing the rate of economic development.

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LITIGATE OR NOT TO LITIGATE? –SIMILARITIES BETWEEN VISEGRAD COUNTRIES

Kohlhoffer-Mizser Csilla

Abstract: *This study is focused on the actual status of the Hungarian society in connection with trials and conflict management. The paper aims to show the possible directions persons can decide in case of conflict. This article aims to summarize the position of mediation, provided the question litigates or not to litigate? Design/methodology/approach: The approach to the topic is on the basis of statistical data collected from national statistical office of Hungary, from Ministry of Justice Hungary about disputes and resolutions, the subject scope of the paper is litigation and mediation. Findings: The increase or stagnation of court cases shows a clear representation of society's attitude to conflict. Results in different contexts do not represent significant differences in the selection of alternative dispute resolution or litigation as conflict management strategies. The findings point to a general increase in alternative dispute resolution, while litigation seems to be on the rise as well at a slower pace. Research/practical implications: It is implicated to have a progressive thinking about conflict resolution. It can be a change in societies to look at conflicts with another aspect. Persons can practice the “win-win situation” from the beginning of life, it can be implied in education. For future research there is an aim to show every possible level where alternative dispute resolution is able to effect, practicing nonviolent communication for the success of conflict management. Scholars and entrepreneurs can make use of this research to apply, use and train mediation tools when conflicts arise. Originality/value: It is supported by literature that leadership styles are in relationship with conflict management styles. In trust based relationships liability has a significant role, to be liable for our decisions we may recognized as a profit in society, and look at alternative dispute resolution approach as a progress. Conflict can be found in human interactions as well as business interactions. Companies involved in formal conflict, search for lawyers and leaders that resolve conflict in an efficient way.*

Key words: *alternative dispute resolution, mediation, litigation.*

1. INTRODUCTION

In the field of mediation, alternative dispute resolution, there are several subjects of research. We can lay stress on either on the methods we use, we can study the communication forms, the issue of contracts. Persons do not even have to think of an official document, informal settlements belong here, too (Kóczy and Kiss, 2017). This paper aims to emphasize the cases, the number of the cases, comparing the numbers of cases started before courts and before the mediators. Decision makers of companies, enterprises, who decides to use alternative dispute resolution instead of court and arbitration procedures has to work with particular regard to that generation gaps are also challenges. (Fodor, 2018) (Kolnhofer-

Derecskei et al., 2017) Conflict management operates in cross-border disputes in business mediation, the paper emphasizes the aspect of the borderless nature of the subject. However the filed of business mediation can not be clearly separated from other mediation types, business mediation often fuse with them, furthermore research shows that mediation have to viewed as complementary elements of an integrated system and that the key to successful dispute resolution in international business is conscious and creative design of conflict management process. (Bühring-Uhle et al. 2006) Research show paths of the negotiation space and negotiation strategies, agreements between nations, firms, and individuals facilitate trade and ensure smooth interaction. (Ott and Ghauri, 2018) This article aims to summarize the position of mediation, with a special focus on business mediation, based on Hungarian data and examples, through the regulation of the European Union with the aim of displaying methods that are globally, internationally usable and applicable without borders. Research argues that social capital as proxied by trust (McKnight, 1996), (Rousseau, 1998) increases aggregate productivity by affecting the organization of firms (Bloom, 2012) and that an institution-based view of international business strategy has emerged in emerging economies. (Peng, 2008).

2. MEDIATION IN BUSINESS-CONSENSUS INSTEAD OF COMPROMISE

Modern international conflict resolution offers a variety of tools for management and strongly encourages the emergence of conflicts, as effective conflict management does not only affect the business and economic development and efficiency of the business, but also the stability and development of the national economy. (Simkó, 2012)

Business mediation is a kind of mediation which needs researches on the basis of definition of consensus. It will be the real win-win outcome and solution after the procedure where the companies were taking part in. In business mediation we will meet evaluation, we will meet restoration and we will need really the transformation method. It is common in every mediation type, case, that evaluation involves another evaluation and they are based on emotions. Observation without an evaluation is really necessary and useful in business mediation, where the consensus has to be reached. Transforming the conflict to connection is one of the most important aim in business mediation, where the interests are in the highest degree about economy. The restorative method is the method by which we can never be mistaken and will always be necessary during dispute settlement.

Conflict can be considered as a breakdown in the standard mechanisms of decision making, so that an individual or group experiences difficulty in selecting an alternative. (Rahim, 2011)

While mediation is often thought of in the context of personal or family disputes, business owners realize that mediation services are available to resolve business-related disputes as well. Research emphasizes the importance of participation of organizations in participatory procedures, their involvement in development policy. (Krémer, 2004)

In alternative dispute resolution of business conflicts there are used the three methods, technics of mediation: the evaluative mediation, the restorative mediation and the transformative mediation.

We could ascertain that compromise and consensus are one in the same, but there are very important differences between the two definitions.

To compromise is to make a deal between different parties where each party gives up a part of their demand. In arguments, compromise is a concept of finding agreement through communication, through a mutual acceptance of terms—often involving variations from an original goal or desire.

The idea of compromise is usually based upon competing demands and some willingness to give up some part of the demands. Each party says they are willing to give up on getting a portion of their demands to get the other to make an agreement. If there is agreement they feel like they lost or won but neither party trusts the other to follow through. The compromise soon collapses and is often forgotten. This leaves both parties with an increasing sense of powerlessness, bitterness and distrust. Figure 1 shows that the status of related companies in relation to the compromise is as follows: on the one hand they are not sure about their needs, on the other hand, it is urgent for them to agree with the other party with their opinions and interests.

Figure 1. The Compromise Process between companies

Company 1 -not sure about the needs: -have an urge to agree with their opinion	Company 2 -not sure about the needs: -have an urge to agree with their opinion	=Compromise
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Source: prepared by the author

Consensus decision-making is a group decision making process that seeks the consent, not necessarily the agreement of participants and the resolution of objections. Consensus is defined as, first, general agreement, and second, group solidarity of belief or sentiment. It has its origin in the latin word cōnsēnsus (agreement), which is from cōnsentiō meaning literally feel together. It is used to describe both the decision and the process of reaching a decision.

The idea of consensus is based upon the reality of overlapping interests. Companies that have chosen to work together for some time and aims almost certainly have a long list of interest in common, especially if they have aims over taking profit. Thing may have become very difficult but there are strengths in the relationship derived by the strengths of each individual. These strengths usually represent a good portion of the shared values. In consensus parties shall realize they can stop trying to get the other to agree about stuff they do not agree about. They can instead focus on finding agreement to solve problems in any area of common interest. (<http://www.selftimeout.org/assets/consensus.pdf>:1)

Figure 2 seeks to show that, in order to find a community of interests between companies, it is necessary to clearly define the interests and plans that can not work in reverse and the interests and designs that can be common and related.

Figure 2. Agreements and plans lead to common interest

Company 1	Company 2
<ul style="list-style-type: none"> • Agreements and plans can not work: • collect them during the mediation process, with remark they can't lead to connection-compared with Company 2. 	<ul style="list-style-type: none"> • Agreements and plans can not work: • collect them during the mediation process, with remark they can't lead to connection-compared with Company 1.
<ul style="list-style-type: none"> • Agreements and plans can work: common and most connecting options to work with Company 2. 	<ul style="list-style-type: none"> • Agreements and plans can work: common and most connecting options to work with Company 1.

Source: prepared by the author

In business mediation conflict transformation theory regards the focus not on case, but it considers the case as an opportunity: as such kind of entrance, where through the transformation of the conflict generating environment can be set in motion. The transformation approach regards the conflict as the catalyser of the progression. (Lederach, 2003) Leadership styles are expected to be significantly related to conflict management styles (Hendel, 2005) (Saeed et al, 2014).

In business dispute-resolving there can be used the four-part Nonviolent Communication Process (NVC). NVC serves our desire to do three things: 1. Increase our ability to live with choice, meaning, and connection 2. Connect empathically with self and others to have more satisfying relationships 3. Sharing of resources so everyone is able to. (www.nonviolentcommunication.com)

The four part of NVC as illustrated in Figure 3—needs, requests, observations, feelings can be incorporated by companies, businesses, and legal entities into their communications, conflict prevention and -if the conflict is already established- into conflict management.

Figure 3. Nonviolent communication used by legal entities

Company's Nonviolent communication schedule	Needs
	Requests
	Observations
	Feelings (activated through natural persons, representatives, employees)

Source: prepared by the author based on Rosenberg: Nonviolent Communication. A language of life. Second Edition. Puddle Dancer Press, 2003 p. 6.

Common strategies a mediator might use during a business mediation to help the parties reach settlement include:

- Brainstorming new options;
- Questioning parties regarding the facts, law, interests strengths, and weaknesses of their case and the other party's case;
- Exploring non-monetary settlement options;
- Conditional demands and offers;
- Backwards bargaining;
- Decision tree analysis;
- Last best demand and offer;
- Best alternative to negotiated settlement;
- Mediator's proposal;
- Attorney-only sessions;
- Triangulating the gap;
- Apologies;
- Timing of payments. (Buyer, 2012)

3. FACTS AND CASES ABOUT DISPUTES AND RESOLUTIONS

In the Hungarian legal regulation there are several ways for businesses how to resolve disputes, how to resolve a conflict, how to continue with business partners. Of course, courts fulfill the task to decide in the complaints of clients, to run the procedures of trials.

What is the number of mediators and how many cases are there yearly to solve. From the year of the Act on Mediation has become to effect, from the year 2007, can we observe an increasing will of natural and legal persons to initiate mediation? The number of registered mediators at Ministry of Justice between 2010-2016 were the following:

Table 1. Registered mediators at Ministry of Justice Hungary 2010-2016

	2010	2011	2012	2013	2014	2015	2016
Number of registered mediators at Ministry of Justice Hungary	1272	1408	1578	1615	993	1041	1168

Source: prepared by the author based on the given data from Ministry of Justice, Hungary (2018)

After three years of increasing in number of registered mediators, a relapse can be observed in 2014, which has been followed by again with slow increase in 2015 and 2016. The requirements of further training and continuative education of mediators included in the legal regulation may influence the issued registered mediators.

The numbers of incoming cases speak about changes despite of the Hungarian indicated course line 'It is bad to litigate' (Ábrahám and Eörsi, 2003). Perhaps people and decision makers change their minds and make the choice to choose alternative dispute resolution. Between 2010 and 2016, on the basis of data giving of registered mediators Table 2 shows

the conformation of mediated cases, separately the cases with a successful agreement at the end and separately the cases without a successful end.

Table 2. Incoming cases to registered mediators at Ministry of Justice Hungary 2010-2016

	2010	2011	2012	2013	2014	2015	2016
successful	216	708	370	589	851	864	983
unsuccessful	63	203	160	204	260	487	400

Source: prepared by the author based on the given datas from Ministry of Justice, Hungary 2018

It is stated clearly in Table 2, that from the year 2014 there is a stable increasing in both –successful and unsuccessful ended incoming cases. Starting from the figures in the table, it is hoped that the number of people, firms or even communities that are choosing mediation will grow. Hopefully this is despite the fact that Table 3 and Graph 1 show the development of litigation cases in numbers, and these figures show almost stagnation, growth or only a minor decrease in litigation in all areas, except for one group of cases. This group is civil and business non-litigious cases, which data for 2010 decreased by 39% compared to 2009 figures and then decreased by 83% from 2010 in 2011.

The development of civil lawsuits between 2004 and 2016 can be said that as a result of the fall in the number of non-litigious procedures, the burden of the courts has been reduced from the year 2010 as depicted in Table 3 and Graph 1. Based on data about the cases, trials at hungarian courts provided by the Hungarian Central Statistical Office it is clear that, in 2010, the total number of cases, decreased by 24% from 2009 to 2010. It is most affected by the legislative change that a major group of non-affiliated cases, payment orders are mostly made by notaries.

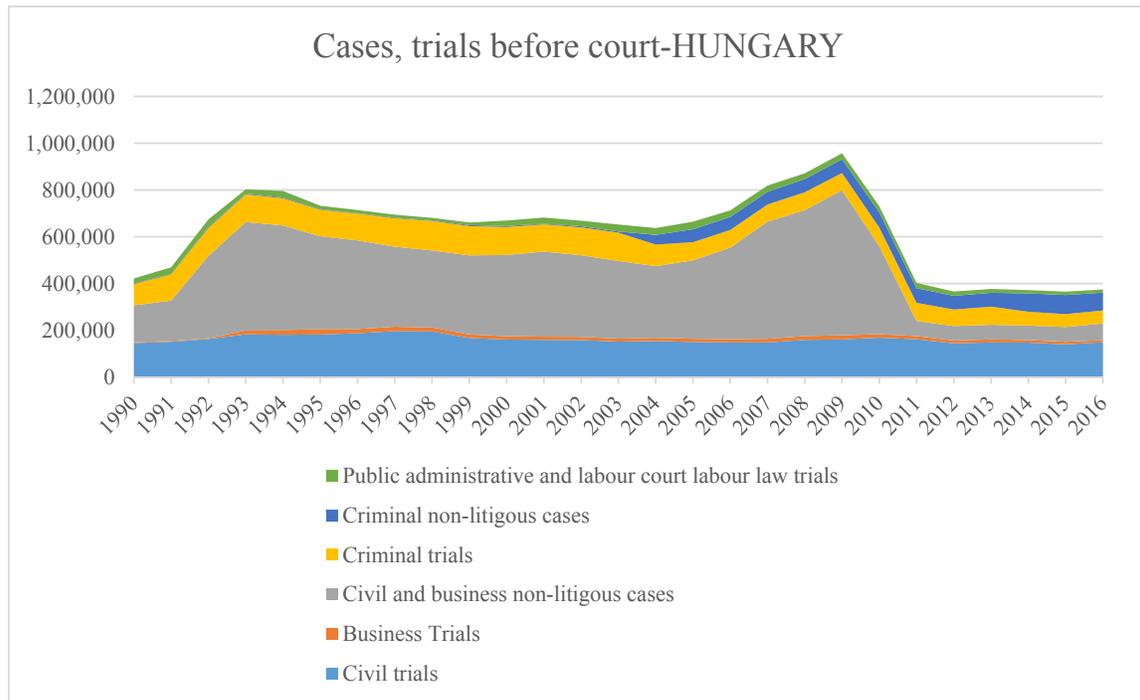
Table 3. Cases, trials at Hungarian courts 2004-2016

Year	Civil trials	Business trials	Civil and business non-litigious cases	Criminal trials	Criminal non-litigious cases	Trial cases at Public Administration and Labour Courts
2004	154 067	13 162	306 928	91 910	41 540	28 856
2005	150 268	13 502	334 956	77 932	55 125	32 818
2006	148 180	13 415	391 954	75 708	55 447	27 903
2007	148 176	15 226	500 964	73 090	54 669	26 538
2008	158 558	16 764	538 364	76 589	56 446	24 086
2009	161 082	17 329	620 597	73 458	59 307	25 075
2010	168 045	15 217	375 981	80 155	64 265	26 745
2011	161 335	13 881	64 328	77 980	62 186	22 844

2012	143 904	12 324	61 521	70 886	58 838	18 299
2013	148 181	12 924	62 138	77 978	59 012	16 023
2014	147 428	10 900	62 019	58 944	78 074	14 186
2015	139 705	11 123	63 293	54 625	82 130	14 273
2016	148 279	9 478	71 247	55 681	76 159	13 477

Source: KSH, Hungarian Central Statistical Office Hungary www.ksh.hu

Graph 1. Changing of cases, trials at Hungarian courts 1990-2016



Source: Hungarian Central Statistical Office Hungary, www.ksh.hu decreasing number of civil and business non-litigious cases only, civil trials (1), criminal non-litigious cases (2), business trials (3), criminal trials (4), public administrative and labour law trials (5) stagnate from (2)-(5)

Mediation is at varying stages of development in Member States. There are some Member States with comprehensive legislation or procedural rules on mediation. In others, legislative bodies have shown little interest in regulating mediation. However, there are Member States with a solid mediation culture, which rely mostly on self-regulation.

The fundamental idea behind the Visegrad initiative, launched in the early 1990s, was for the four re-emerging CEE democracies (Czech Republic, Hungary, Poland, Slovakia) to coordinate their policies in striving for NATO and European Union membership. Government officials believed that by banding together and speaking with almost one voice in various multi-national formats they were more likely to be heard and no country would fall behind in its aspirations and achievements. (Bugajski, 2017)

Mediation is at varying stages of development in Member States. There are some Member States with comprehensive legislation or procedural rules on mediation. In others, legislative bodies have shown little interest in regulating mediation. However, there are Member States with a solid mediation culture, which rely mostly on self-regulation.

For the purposes of the Directive a cross-border dispute shall be one in which at least one of the parties is domiciled or habitually resident in a Member State other than that of any other party on the date on which:

- (a) the parties agree to use mediation after the dispute has arisen;
- (b) mediation is ordered by a court;
- (c) an obligation to use mediation arises under national law; or
- (d) for the purposes of Article 5 an invitation is made to the parties. (The DIRECTIVE 2008/52/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 May 2008 on certain aspects of mediation in civil and commercial matters. Article 2. Cross-border disputes)

More and more disputes are being brought to court. As a result, this has meant not only longer waiting periods for disputes to be resolved, but it has also pushed up legal costs to such levels that they can often be disproportionate to the value of the dispute.

Mediation is in most cases faster and, therefore, usually cheaper than ordinary court proceedings. This is especially true in countries where the court system has substantial backlogs and the average court proceeding takes several years.

This work would like to give an insight into the regulation of Visegrad countries (V4) regarding mediation. All Visegrad countries are making efforts in the field of alternative dispute resolution. Following the introduction of Hungary, Czech Republic, Slovakia and Poland is in the mediation position pointed below.

Czech Republic: The Probation and Mediation Service of the Czech Republic is the centralised body responsible for mediation as a means of dealing with the consequences of a criminal offence between the offender and the victim in criminal proceedings. The Ministry of Justice has responsibility for this service.

For mediation in civil law matters, you can contact one of the mediators offering that service. Contacts for mediators working in the Czech Republic may be found on various websites by entering the search term 'mediation'.

A list of mediators may be found, for example, on the websites of the Czech Mediators Association, the Czech Bar Association and the Union for Arbitration and Mediation Procedures of the Czech Republic. Contacts for the Probation and Mediation Service of the Czech Republic, acting within the remit of the relevant district courts, may be found on the Service's website.

Slovakia: Mediation mechanisms are described in Act No 420/2004 on mediation and amending certain laws, as amended, which governs:

- the performance of mediation,
- the basic principles of mediation, and
- the organisation and effects of mediation.

This Act applies to conflicts in relationships governed by civil law, family law, commercial contracts, and labour law.

Poland: In 2010 a section was created within the Ministry of Justice to be responsible for mediation issues, currently functional in the *Division for Victims of Crime and the Promotion of Mediation* within the Department of International Cooperation and Human Rights. Background information on mediation activities can be found on the website of the Ministry of Justice.

In recent years, the Ministry of Justice has been paying particular attention to issues related to the development and popularisation of mediation and other forms of alternative dispute resolution in Poland and increasing the effectiveness of the justice system and its accessibility to citizens. In 2010 a network of mediation coordinators were appointed upon the initiative of the Ministry.

There are currently 120 coordinators (judges, probation officers and mediators), in eight courts of appeal, all the regional courts and in six areas of district courts. In respect of advice and opinions, the Minister for Justice works with the Social Council on Alternative Dispute and Conflict Resolution ('the ADR Council'), which plays an important role in promoting the idea of mediation and communication between central government, the justice system and the mediation community.

It was appointed for the first time by Order of the Minister of 1 August 2005 as a body to advise the Minister on issues of alternative dispute and conflict resolution in the broad sense. The achievements of the first term of the Council included the following documents:

- Code of Ethics of Polish Mediators (May 2008).
- Standards for the Training of Mediators (October 2007).
- Standards for the Conduct of Mediation and Mediation Proceedings (June 2006).

The Council is currently made up of 23 representatives from the field of science and experienced mediation practitioners, as well as representatives of the following non-governmental organisations, academic institutions and government departments.

The Council's powers consist above all of drafting recommendations for rules on the functioning of the national system of alternative dispute resolution, and also:

- adapting the ADR system to the requirements of EU law,
- developing a uniform model of mediation in the Polish legal system,
- promoting standards for mediation proceedings,
- promoting ADR mechanisms as a conflict resolution method among members of the judiciary and judicial staff, law enforcement services and the public,
- creating an institutional environment in which particular forms of ADR can develop,
- undertaking other ad hoc projects to develop mediation in Poland. (https://e-justice.europa.eu/content_mediation-62-en.do)

4. CONCLUSION

If a conflict is managed, it is solved through an activity, which was conducted by the parties in the case and the procedure was led by the mediator. Conflict-management is an activity and a kind of communication the methods of which can be applied extensively, internationally, regardless of borders. When people are able to understand and communicate their needs clearly, conflict may lead to connection. People have a common sense, that to solve, resolve, to transform a conflict is better than live with or in it. It is a common sense,

that nonviolent communication leads to effects, it is productive. This paper would like to show some of the resources, of the living instruments, from which business environment, legal entities can choose. The task, the mission is to know well, how, where and when to make the right step in the space of alternative dispute resolution until we reach the solution, so business mediation is an international tool with an international methodology to help persons (natural and legal) in entrepreneurial activity. This article wanted to present some of the specific characteristics of business mediation, following the insights into the statistics, through the presentation of the cross-border and accurate methodology of mediation, the observation of participants and the transformation steps until reaching the agreement. International business scholars continue to struggle to theorize the relationship between country and cultural group boundaries. (Peterson et al., 2018)

The increase or stagnation of court cases shows a clear representation of society's attitude to conflict. There are several procedures worldwide, business can choose: the communication can be systematically facilitated with the aim of enabling the parties themselves to take responsibility for resolving their dispute. The findings point to a general increase in alternative dispute resolution, while litigation seems to be on the rise as well at a slower pace.

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METHODS OF PROJECTS' FINANCING ANALYSIS ON CROWDFUNDING PLATFORM

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Abstract: *Crowdfunding is one of modern successful business financing models, an alternative to classic bank lending. Crowdfunding platform is of great importance in the market and is not limited only to the transfer of information between entrepreneurs and investors. With limited available information about project financing on crowdfunding platform, methods for obtaining additional conclusions about the current state of the fund-raising process on particular platform become relevant. The article analyzes projects' data presented on a famous crowdfunding platform Boomstarter. In the presence of descriptive information about projects on Boomstarter there are no aggregated data on the results of crowdfunding. To assess the content of the projects' web pages, specialized HTML parsing tools are used. The developed methodology using the special library provided data set for projects presented on Boomstarter platform during 2013–2018. Using the developed approach to extracting open data about the projects available on the Boomstarter, the values of the following indicators were obtained (project goal, collected funds, number of depositors, project success). The purpose of the study was to obtain descriptive statistics for crowdfunding project targets. The use of data visualization, data mining methods allows to obtain more objective results during the financial analysis. One of the main issue of a crowdfunding campaign is to determ project goal to raise. The evaluation of successful projects in previous periods will allow for a more objective decision making to support a project. The proposed approach is of interest to crowdfunding process participants, such as entrepreneurs and investors.*

Key words: *Crowdfunding platform, data extraction, HTML parsing, project financing.*

1. INTRODUCTION

Crowdfunding is a popular financial instrument of collective investments used by online investors (mostly natural persons) who voluntarily pooled resources to finance projects on a crowdfunding platform organized on the Internet with the help of information technologies. The emergence and rapid growth of crowdfunding as a fundamentally new model of collective projects financing in various fields became possible because of the widespread development of information technology, the Internet, the emergence of specific technologies for the gathering, processing and analysis of information, instant financial transfer systems and social communities and networks [1].

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The United States, Great Britain and China are the largest participants of the global crowdfunding market. It is only starting to take off in Europe and CIS countries. In 2010, the capitalization of the crowdfunding industry was \$880 million, in 2014 - \$16 billion, and in 2015 - \$34 billion, by 2020 it will triple and reach \$90 billion (according to World Bank estimates). For comparison, the entire venture capital industry accumulates about \$30 billion a year. There are about 1250 crowdsourcing platforms in the world, half of the crowdfunding market enters North American markets (about \$17.2 billion dollars), \$10.5 billion – Asian markets and \$6.4 billion – European markets. There are more than 20 crowdfunding platforms in Russia: Boomstarter, Planeta, Kroogi, StartTrack, SIMEX, Together.Yandex and others [2].

Kickstarter (USA, since 2009), IndieGoGo, Artistshare, My Major Company, Crowdrise are the largest crowdfunding platforms in the world [3]. For example, two starters of start-up form North Macedonia had a dizzying success on Kickstarter in 2016. The project "Archona Games" has collected more than 23 thousand USD on the production of the sci-fi board game "Small Star Empires" and the developers of the "Final Frontier Games" managed to collect more than 107 thousand USD for the release of the fantasy game by the name "Cavern Tavern". Still, the project has collected much more money than it was stated in the beginning of their Kickstarter campaign.

Currently, there is an increase of the number of financial platforms around the world and the quality of services provided, the Commission, which is the main source of income of the platform, is reduced. Crowdfunding is now recognized by experts as one of the future promising investment tools. In these circumstances, the justification and development of methods for making decisions about investing on crowdfunding platforms are important and relevant scientific objectives. Classical statistical approaches to investment valuation are not always effective in this case.

In this article, the authors have developed a mathematical model using Data Mining methods for decision making about crowdfunding platforms investments. In order to do this, the authors have used an original approach based on greedy algorithms and the construction of decision trees. The model was tested on the data of the Russian crowdfunding platform Boomstarter, but this method of analysis can be applied to other crowdfunding platforms in the world.

The purpose of the article is to determine the impact of standard indicators of crowdfunding platforms (project category, target amount, backers, project success) on the success of investing projects on crowdfunding platforms.

In order to build a predicative mathematical model that evaluates the success of the project it is necessary to form a data sample. It is considered as a separate task because crowdfunding platforms provide a limited set of indicators for active projects. Aggregated results of all projects or detailed data of completed projects are not available. Therefore, this study was conducted in two phases:

- data extraction from crowdfunding platform;
- the model construction to assess the project success on the basis of available indicators on the platform.

The application of classification model for crowdfunding projects will support decision-making on investing in the selected project. In addition, it will provide an

opportunity to determine the exact financial amount (target amount) more effectively for users of crowdfunding platforms who are offering their projects.

2. DATA EXTRACTING FROM CROWDFUNDING PLATFORMS

The study of complex socio-economic objects is associated with the use of not only quantitative methods of evaluation, but also of different approaches to the text information processing. At the same time, extracting the necessary data from hypertext files is a separate complex task [3]. In particular, if there is descriptive information about projects on crowdfunding platforms, there are no aggregated data on project results and investment indicators which are based on crowdfunding [4]. To build a classification model, it is necessary to create a sample with a set of attributes, using the information about the projects available on the web-resources of the crowdfunding platform.

There are many libraries on Java, C#, Python, JavaScript platforms that allows the data extraction from html-pages. In order to collect data from the crowdfunding platform, JSoup 1.11.3 [5], an open source Java library (designed to analyze, extract, and process data stored in HTML documents) was used. It provides a convenient API for retrieving and manipulating data using DOM (Document Object Model, document object model), CSS, and jquery-like methods. JSoup allows you to clean and analyze html-files, find and extract data using Dom traversal or CSS selectors, manipulate html-elements, attributes and text [6].

Before using this tool, you need to evaluate the structure of the site and the DOM of its pages. There are two types of commands for setting up a pass through the site structure: loading the site and extracting the required element. With this set of commands, a hierarchical structure is formed. For further manipulation and visualization convenience the output data is extracted in xls format via the Apache POI library.

These tools can be used to extract (and parse) data from other websites of this type, but you must first evaluate the structure of the website and the key objects on the website pages that will be used to navigate through the pages, and the objects which the data is extracted from.

3. DATA ANALYSIS OF FINANCING CROWDFUNDING PROJECTS

Based on the materials of the Russian Boomstarter platform, the authors have developed a technique that is applicable to other crowdfunding platforms for making investment decisions.

Russian platform Boomstarter is one of the largest crowdfunding platforms for attracting investments and is very similar to the American Kickstarter. Projects from different categories are accepted: business, technological, creative, social and other projects. If the project does not collect the required amount within the specified time, the collected money is returned to the sponsors. In order to receive funding you need to place a description of the project on Boomstarter, specify the minimum amount of funds that must be collected during the stated period. If the collection is unsuccessful, the money will be returned to the sponsors. Placing your project on Boomstarter, the author reserves all rights to the property, but details of the project remain available to the public [7].

Using the approach developed by the authors to the extraction of open data on existing projects on the Boomstarter platform, the main criteria for project evaluation were selected and the values of the following indicators were obtained:

- Project category;
- Target amount, RUR;
- Number of backers, pers.;
- Project success, %.

An important feature of a crowdfunding project is its success. The project is considered successful if the crowdfunding campaign has not collected less than 100% of its goal (in case of excess funding, values above 100% are possible). The choice of this measure is determined by the "all or nothing" principle of the platform.

The authors have collected the information on 1800 projects for this platform. Descriptive statistics for the selected indicators in the platform to assess the dynamics Boomstarter for years 2013-2018. Only successful projects have been selected for the study. In 2013-2016 the average value of the target amount of the project and the amount of collected funds have increased. In 2017, there was a downward trend in the amount of the target amount, while the amount of funds raised has increased on average. In 2018, the projects have showed large target amounts, but the collected funds decreased (Fig.1).

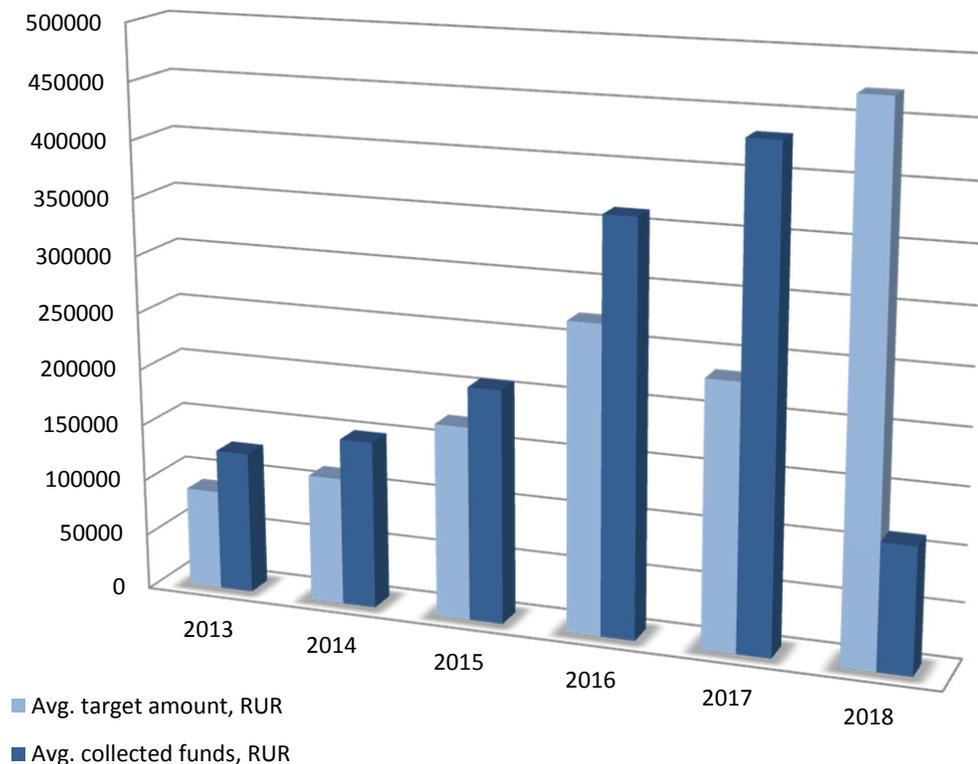


Fig. 1 Dynamics of financing crowdfunding projects for Boomstarter

In the process of comprehensive evaluation of projects that were successful in terms of the amount of funds raised in 2018, it should be noted that the largest amounts were received by projects with relatively small target requests.

4. THE APPLICATION OF DATA MINING METHODS FOR CLASSIFICATION OF PROJECTS

Classification tree is a method of predicting if the observations or objects belong to a class of categorical dependent variable based on the corresponding values of one or more predictor variables. As a method of exploration analysis or as a last resort when all traditional statistical methods fail, classification trees are the effective means of solving the classification problem [8].

Consider a binary tree in which:

- each internal node v is assigned a function (or predicate) $f_v: X \rightarrow Y$, where X is vector denoting a pattern or feature vector and $Y = \{1, 2, \dots, K\}$ denotes the associated class label (in case of binomial classification $Y = \{0, 1\}$);
- each leaf node v is assigned with a prediction $c_v \in Y$ (in case of classification, a probability vector can be assigned to the leaf).

The decision tree uses a greedy algorithm to select the feature transformation for a given problem, and then builds a linear model over these features.

Classification according to the algorithm starts from the root node v_0 and calculates the value of the function f_{v_0} . If it is zero, then the algorithm goes to the left child node, otherwise to the right, calculates the predicted value in the next node and makes the transition either to the left or to the right. The process continues until the leaf node is reached; the algorithm returns the class label assigned to that node. This algorithm is called a binary decision tree. In practice, single predicates f_v are often used when compare the value of the quantitative features with the threshold value $f_v(x, i, p) = [x_i < p]$.

In simplified form the decision tree is constructed recursively. For current step, algorithm splits the entire feature space into a number of disjoint subsets $\{R_1, \dots, R_M\}$, and in each subset R_m , $m=1, \dots, M$ gives a prediction.

The basic greedy algorithm for constructing a binary decision tree can be represented as follows. Consider a training sample of X , find its best partition into two parts $R_1(i, p) = \{x | x_i < p\}$ and $R_2(i, p) = \{x | x_i \geq p\}$ in terms of a predetermined quality functional $Q(X, i, p)$. After finding the best values of i and p , we will create the root of the tree by matching it with the predicate $[x_i < p]$. Selected objects are divided into two parts: one will fall into the left subtree, the other into the right one. For each of these subsamples, repeat the procedure recursively, building child nodes for the root, and so on. The fulfilment of a stop condition is checked at each node. If the condition is met, stop recursion and declare this node as a leaf. When the tree is built, each leaf is assigned to a class to which a larger number of objects in the leaf. The choice of a particular function depends on the quality functional of the original problem.

The specific method of constructing the decision tree is determined by:

- the form of predicates at the nodes;
- quality functional $Q(X, i, p)$;

- termination criteria;
- missing values processing method;
- pruning method.

While building a tree, we must specify the quality functional on the basis of which the sample is split at each step. Let R_m denote the set of objects that fall into the node considered at this step, and R_l and R_r - denote the objects that fall into the left and right subtree, respectively, for a given predicate. Consider the following types of functionality:

$$Q(R_m, i, p) = H(R_m) - \frac{|R_l|}{|R_m|} H(R_l) - \frac{|R_r|}{|R_m|} H(R_r),$$

where $H(R)$ is the impurity criterion, which evaluates the quality of the distribution of the target variable among the objects of the set R . $H(R)$ must be minimized in the process of building the model, the quality functional $Q(R_m, i, p)$ - maximized.

There are several termination criteria for stopping the tree construction algorithm: limiting the maximum depth of the tree; limiting the minimum number of objects in the sheet; limiting the maximum number of leaves in the tree; stopping if all objects in the leaf belong to the same class; the requirement that the quality functional was improved by at least s percent.

With the help of competent selection of such criteria and their parameters it is possible to affect the quality of the tree significantly. However, such selection is labor-intensive and requires cross-validation.

There are a number of methods that implement various modifications of the General approach to the construction of decision trees (CHAID, ECHAID, CRT, QUEST). Unlike CRT and QUEST, where binary splitting is used, CHAID allows multi-dimensional splitting of nodes. Compared to other methods, CHAID is characterized by a moderate computation time. Among other things, the CHAID method has its own way of handling missing values. The method works with variables of all types, including nominal ones.

When you run statistical tests, CHAID automatically adjusts their significance levels for different combinations of predictor categories. These adjustments are called Bonferroni adjustments, which are based on the number of tests and are related to the level of predictor measurements. The presence of Bonferroni corrections allows you to control the level of error of the first kind.

StatSoft Statistica 10 was used for modeling. The results are presented in the form of a diagram, which is a clear and simple tool for constructing the rules of classification of observations. The conclusions drawn from them are much easier to interpret than if they were presented only in tabular numerical form.

In the presented decision tree D is a node number for finding it on the diagram of the tree, N is the number of observation units, the class label corresponds to the class to which most of the observations in the node belong (Fig.2). A chart similar to a two-dimensional histogram is drawn inside each node of the decision tree. In this diagram, the number of objects of a certain class at a given node is represented by a bar of the corresponding height.

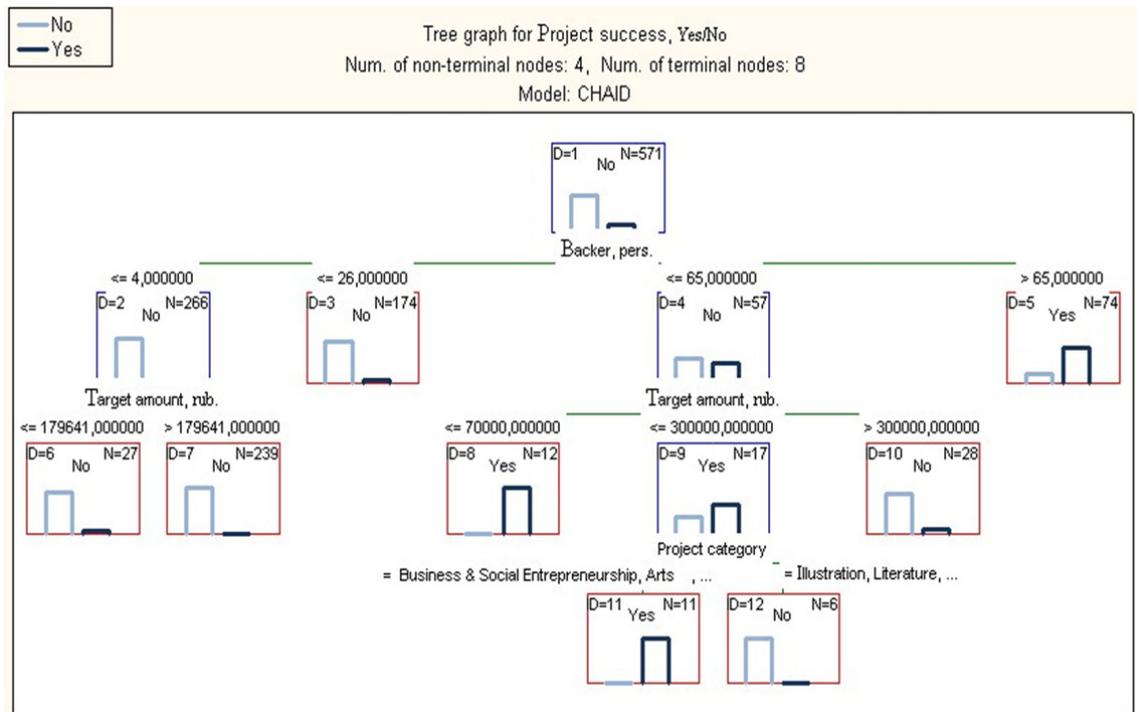


Fig. 2 The results of the CHAID Classification model building

In natural language the results of decision tree modelling can be expressed in the form of IF-THEN rules. Therefore it is possible to generate classification rules as a set of commands or text in order to use or export to applications to databases.

The most significant predictor for the classification is the variable number of contributors, after that is the target amount specified for the project. The adequacy of the model was verified by n-fold cross-checking, which is applied in the case of a small sample (less than 1000 observations). The whole data set is divided into n-samples (in this case, n=10). Then n-trees are constructed with sequential exclusion of each sample.

The total values of classification errors are an important estimate of the predictive accuracy of a tree. The classification matrix is a conjugacy table that indicates the number of correctly and incorrectly classified observations (Fig. 3).

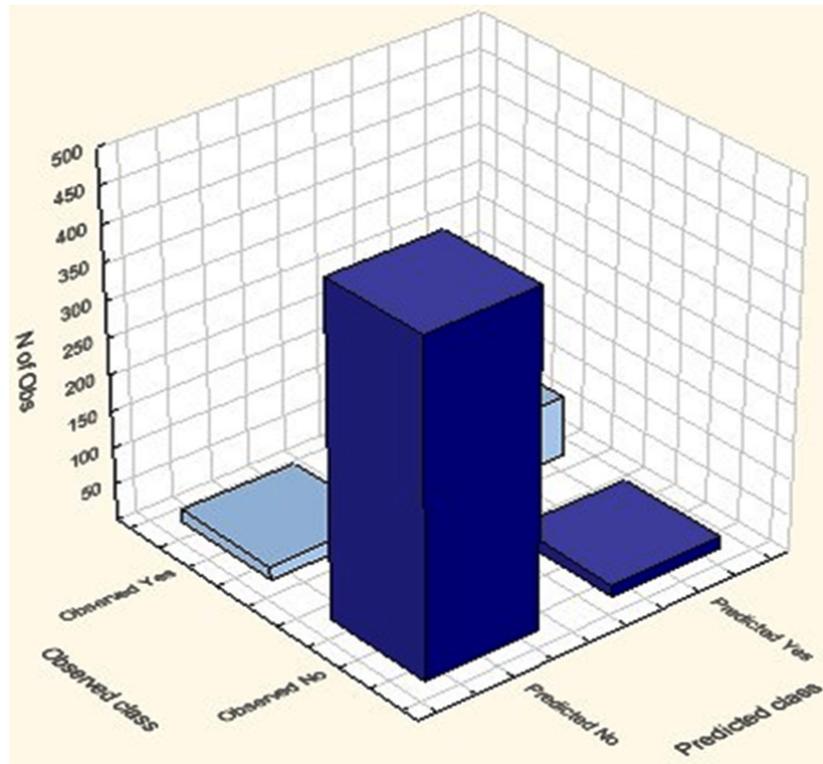


Fig. 3. Classification matrix: CHAID model

Model prediction accuracy of CHAID model was 82.61%, and we can use this decision tree model to classify crowdfunding projects.

For each of the analyzed independent variables it is possible to estimate the significance of predictors in the classification process, the rank of its significance is number in the range [0,1]. 0 corresponds to low significance of variables, and 1 – high. The predictor significance graph allows us to judge the discriminating power of each of the predictors involved in the construction of the tree: the higher the rank - the greater the significance of the corresponding predictor (Fig. 4).

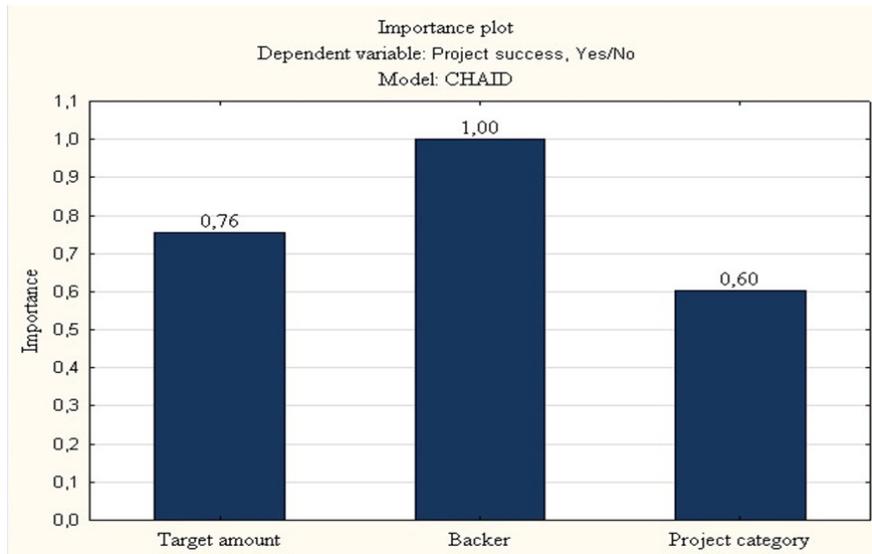


Fig. 4. Graph of predictor significance (Importance plot: model CHAID)

The most important factor affecting the success of the project, in accordance with the classification model is the number of investors (rank 1,00). The next important factor is the target amount (rank 0,76), which confirms the hypothesis of a significant impact of this indicator on the success of the project. Attention should be paid to the selection of the target amount in the description of the crowdfunding project.

The main task of data analysis using decision trees is to use a given set of observations as training set, to identify hidden statistical patterns in the data (as some random (independent) characteristics affect the (dependent) characteristic of interest to us) and build a model of dependence in the form of a decision tree.

5. CONCLUSION

With such limited information available on crowdfunding projects, methods to obtain additional information about the current state of the fundraising process on a particular platform may be in demand. The wide range of applicability of classification trees makes them a very attractive data analysis tool.

The proposed classification model based on the CHAID method allows the assessment of the project success on the basis of the constructed decision tree. The basic difference between CHAID analysis and regression analysis is that the correlation between the value of the dependent variable and the values of the independent variables is not presented as a general predictive equation, but as a tree structure, which is obtained by hierarchical data segmentation.

The results of this approach contain a lot of valuable information for the parties involved in the crowdfunding process, entrepreneurs and investors. Assessing the project's success will allow to make a more objective decision on the support of a project.

The use of methods of intellectual analysis provides opportunities for analysis and modeling of complex economic problems and crowdfunding assessments.

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IMPLEMENTATION OF AUDIT TASKS IN THE CONTEXT OF CORPORATE GOVERNANCE OF TRANSITIONAL COUNTRIES

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Abstract: *Implementation of an audit as part of the management functions of an enterprise requires the auditor to apply the adopted instructions where the get is possible, as well as the approach to using the techniques of the audit profession specified in the prescribed audit procedures. All this is adopted by the management of the company.*

The implementation of the audit requires the first presentation of a general model of the impact of audit jobs or profession in general management in an enterprise.

This is of particular importance for transitional countries and transitional enterprises that have been in the constant transformation of the last decades in the Western Balkans.

Key words: *Managing the company, decision, company.*

1. INTRODUCTION TO INTERNAL AUDIT IN THE PUBLIC SECTOR IN TRANSITION COUNTRIES

Transition countries have a situation where enterprises in their business have very heterogeneous groups of peculiar jobs for whose functionality there is a need for the existence of an audit profession and management reporting [1], [2], [3], [4], [5], [6], [7], [8], [9].

There is a general expectation that everyone in charge of the conduct of public affairs and the management of public funds is fully responsible for the conduct of these affairs in accordance with law and relevant standards, and that public funds are kept and used economically, efficiently and effectively, which is the essential basis of the audit operation in all systems and businesses, regardless of the nature of ownership [10], [11], [12], [13].

In addition, a number of authors point out that one of the goals of the policy of improving the management of the company is to enable faster and better quality business by improving the services that are integrated, directed towards users and concentrated on the result, which requires that the whole system be directed towards measuring performance (performance) where cooperation between organizations in the public and private sectors is possible [14], [15], [16], [17], [18], [19], [20].

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The essential establishment of control mechanisms can be of great importance in the organization of primary agricultural production, which very much possesses a diverse range of activities which, according to the system of very heterogeneous business conditions [21], [22].

Generally, many authors point out that the implementation of the audit will result in more efficient and effective implementation of public programs and projects, as well as the safety and safeguarding of public funds in the public sector, but will soon be beneficial to the private sector which should be dominant in the transition countries.

2. EXPECTED SETTING OF CONDITIONS IN THE TRANSITIONAL COUNTRIES

Primary responsibility, which involves ensuring that public affairs is conducted in accordance with law and appropriate standards, and that public funds are managed with absolute integrity, and that they are spent expensively, remains for ministers and other elected representative, as well as for managers and various officials in every organization. In order to fulfill this responsibility, it is necessary for state authorities and all persons responsible for conducting public affairs to establish and maintain an appropriate structure to conduct their business and to retain the resources at their disposal.

Public sector audit "adds value" not only through analyzing and reporting on what has happened, but also "looking ahead", that is, identifying areas where improvements and encouragement of good practice are possible. In this way, the audit contributes to the promotion of improved standards of governance, better management and decision-making process, and more effective use of taxpayer funds.

Public sector auditing represents an important link in the chain of accountability, as it increases accountability, both in terms of elected or appointed persons, as well as in terms of users, taxpayers and citizens in a wider sense.

The existence of an auditor's independence from an audited is a postulate that must be applied by each entity or enterprise.

A wide scope of public sector audit work, which includes regularity, "fairness" and "value for money", which is also transmitted to other parts of the economy. The auditor's ability to audit and review the available resources to the public and democratically elected representatives who are responsible for financing the relevant activities is a general constant in the transition countries.

The broad objectives of the audit are reflected in the following:

1. Auditors should understand that there is a wider public interest in the audit of funds, which primarily arises from the fact that taxpayers are obliged to pay taxes, and therefore have a specific interest in being convinced that public funds are managed in an appropriate manner, unlike from a shareholder in a company that has the ability to decide on whether to buy or sell its shares.

2. In addition, bodies in the economy, as corporate entities, usually do not deal with the production of goods, or do not provide services whose primary purpose is to re-sell in the open market, and therefore their primary goal is not profit. Accordingly, these authorities exist to provide cost-effective, efficient and effective public services.

3. Therefore, citizens rightly expect that public authorities use public funds exclusively for justified purposes, and that there are high standards of integrity and that they are used in the most efficient way, which is also accepted through the legal responsibility of auditors in the economy.

4. It is therefore necessary that the audit in the economy be planned in relation to the broader perspective, that is, it must be taken into account that the funds must be managed in an appropriate manner and in accordance with the concepts "value for money".

5. In short, auditors should accept the fact that requirements relating to the audit of funds are much wider than those applied in the economy, and include:

- An analysis of the effectiveness (efficiency) of the internal control system;
- The audit deals with aspects of accuracy, as well as a structure that ensures economy, efficiency and effectiveness (efficiency);
- Consideration of the legality/regularity of transactions;
- An analytical approach to the business, where the starting point should be the overview of the characteristics of the subject of the audit, the responsibilities and problems that it faces, and the administration and organization of the subject of the audit;
- An active approach, through which audit work, where possible, is characterized by a constructive attitude that provides for changes, which is reflected in maintaining constructive adequate relationships with officials, as well as in the timing and approach used in reporting audit findings.

3. INTERNAL AUDIT SETTINGS

The Institute of Internal Auditors (IIA) defines the internal audit in the following way: Internal Audit is an independent and objective appraisal and consulting activity designed to "increase value" and improve the organization's operations. Internal audit through the systematic and disciplined approach applied in assessing the activity helps the organization to achieve the goals.

The legal basis for internal audit is the Law on the Budget System. The internal audit functions in accordance with the Standards and the Code of Ethics of the Institute of Internal Auditors. The Internal Audit Charter regulates the role of internal audit, and the necessary environment in which an audit can effectively function and contributes to the organization's performance.

Internal auditors:

- They carry out their work honestly, responsibly and with due care;
- Act in accordance with laws and regulations and disclose information only when required by law;
- They do not participate knowingly in illegal activities, or do not engage in actions that discredit the profession of internal audit or organization;
- Present and contribute to the legitimate and ethical goals of the organization.

4. AUDIT STANDARDS WITH A REFERENCE TO INTERNAL AUDIT

Internal audit work is performed in accordance with internationally accepted standards established by the Institute of Internal Auditors. These standards are also known as Standards of Professional Practice of Internal Auditing (Standards).

It is the responsibility of all internal auditors to comply with these Standards.

The purpose of the Standard is that:

- establish the basic principles of the proper internal audit practice;
- Provide a framework for conducting and promoting a range of internal audit activities that "increase the value" of the organization and benefit from it;
- Establish the basis for the performance of internal audit work;
- Encourage improvement of the organization's procedures and activities.

Standards include attribute standards - 1000 series, performance standards - 2000 series, and application standards. More details on all standards are provided in Annex V of this Manual.

a) The attributive standards refer to the characteristics of a particular organization, as well as individuals who perform internal audit activities and include:

- standard 1000 - Purpose, powers and duties,
- standard 1100 - Independence and objectivity,
- standard 1200 - Expertise and due professional attention,
- standard 1300 - Program for quality assurance and improvement.

b) Performance standards relate to the nature of internal audit activities and provide qualitative criteria in relation to which the performance of internal audit operations can be measured. Attributive standards and performance standards in principle apply to all internal audit tasks.

- Standard 2000 - Internal Audit,
- standard 2100 - Nature of work,
- standard 2200 - planning of engagement,
- standard 2300 - doing business,
- standard 2400 - Reporting of results,
- standard 2500 - tracking progress,
- Standard 2600 - Acceptance of risk by the management.

c) Implementation standards relate to the application of attribute standards and performance standards to specific types of engagement (e.g. system audit, financial audit or performance audit), investigation related to a specific criminal act or management's request for an audit to be carried out).

Standards and the Code of Ethics should be considered in conjunction with the Law on the Budget System and other guidelines and regulations of the Ministry of Finance related to internal audit activities.

5. CONCLUSION

With this work, the authors draw attention to the importance of implementing the audit as an expert in the functioning of management and improvement of corporate governance. This promotes the application of the audit profession in the economies of the

transition countries. A review profession of ethics is necessary, since the audit is based on the confidence attached to its objective assessment of risk management, control and management ingeneral.

In this respect, it is necessary to adopt an ethical code, to implement the definition of an audit involves more than two basic components, in order to significantly improve the company's business and achieve maximum management effects.

In addition, the authors emphasize the importance of applying the correct, true and true financial and any other top management reporting in order to achieve the best results in the business.

This involves the revision as essential to the relevance of the profession and practice of improving management, as well as the application of the code of conduct that illustrates the norms of conduct expected of the auditor.

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HIGHER EDUCATION INSTITUTIONS IMPACT ON THE REGIONAL INNOVATIVE DEVELOPMENT

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Abstract: *The role of universities and higher education in the innovations generation and transfer determines the relevance of research allowing to assess their impact on sustainable regional innovation development. The article is devoted to the question of the regional innovation growth and directions of R&D spillovers in regional economic systems, developed a research methodology of define the university's contribution to regional innovation development and a toolkit for assessing the socio-economic efficiency of spatial development and diagnosing the influence of R&D spillovers on regional structural shifts. A system of indicators characterizing the degree of influence of universities on innovative development of regions, methods and algorithm for assessing the factors of influence and contribution of universities to regional innovative development are proposed. The model for assessing the impact of university performance indicators have been constructed, which allowed to analyze the influence of higher education institutions spillovers on the effectiveness of innovation development in the regions. Based on the results of the study, assessments of the influence of universities on regional innovation development were obtained in the Russian cases. The practical significance of the research results lies in the possibility of taking into account the obtained quantitative measurements of the innovative development of the regions in the implementation of the modernization of higher education and in the building of the public policy of regional innovation development.*

Key words: *University, innovations spillovers, higher education institutions, region, regional system of higher education, regional development.*

1. INTRODUCTION

Current discussions on the determinants of economic development, problems of higher education, the effectiveness of investments in human capital are relevant to the implementation of the innovation policy of any country. In the recent decades the search of mechanism for sustainable innovation growth stipulates identification and analyzing factors of innovation development, that support increase in the effectiveness of economic performance and establishment of high-technological structure. Modern researchers notice that in the conditions of globalization competitiveness of national economy and its steady

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development rates are largely determined by dynamics of regional innovation systems and efficiency of interaction among its actors: university, science and business, where universities become key drivers of innovation-driven growth [1], [2], [3], [4].

The increasing role of the higher education institutions and universities and their weight in regional innovation development, contribution in generation of the innovations, knowledge transfer and economical progress of territory stipulate relevance of the studies of R&D spillovers, which help to determine and evaluate the influence of universities on the innovation development and growth.

The purpose of this study is to develop a research methodology for determine the university's contribution to regional innovation development.

For this, the following tasks are set in the article: to define the system of indicators characterizing the degree of influence of universities on innovative development of regions, to offer the methods and algorithm for assessing the factors of influence and contribution of university's R&D spillovers to regional innovative development and develop a toolkit for assessing the influence of R&D spillovers on regional structural shifts.

Modern researchers of national and regional innovation systems emphasize the importance of university activities, and the literature extensively discusses potential mechanisms by which they can stimulate regional innovation activity. They specify that regional universities should be considered as one of the main elements to build up the strategy of development of regional economy [5], [6], [7].

Significant changes in interaction between actors of regional innovation system occurred and lead to modern universities produce multiplier effects in regional innovation systems and influence the local economy through the following directions:

- human capital development: universities prepare skilled personnel for the regional labour market, which come into the economy and create new products and technologies, provide a higher level of consumption and a higher tax income of the region;
- economic development of the region: as operating organizations, universities generate income from local and visiting students, give tax revenues to the regional budget, increase business activity and provide employment to the population in related industries serving the university (accommodation, food, service);
- innovative development of the region: through the production of new knowledge and technologies, the commercialization of developments and the attraction of financing, they contribute to accelerated economic growth;
- social development of the region: through interaction of actors of the regional innovation system, creating of "innovation environment", partnerships, the possibility of producing new knowledge in process of education and research, they create and accumulate brain capital, conditions for expanding outcomes of the R&D, scientific and informational cooperation in the region. The concordance of these relations in regional partnership networks shows positive impact on development of innovation activity and plays main role for diffusion innovation processes.

2. THEORETICAL ANALYSIS

2.1. DIRECTIONS OF R&D SPILLOVERS IN REGIONAL ECONOMIC

Knowledge transfer as a new methodological platform presents a modern theoretical basis for studying the mechanisms of regional innovation systems. Innovation and the application of knowledge is the central engine of economic and endogenous growth theory [1]. One important channel of knowledge transfer is the process of educating students at universities, increasing the quality of human capital. The second significant factor is the “technological” or “R&D spillover” effect.

The term “R&D spillover” is most often defined as a spread or diffusion of knowledge between countries, industries, or firms. The spillover effect is a phenomenon that occurs when information collected and used to carry out a specific activity creates new opportunities for applying this knowledge in other areas [8]. Spillover serves as a catalyst for the development of new ideas and ways to apply them. University research directly has a “spillover effect” on regional innovation systems, they are “incubators” of knowledge transfer and facilitators transfer academic knowledge to the private sector.

The presence of many spillover effects of university activities and, as a result, the multiplicity of channels and areas of influence of university parameters and the inability to determine one of the most important of them the possibility of its use in assessing the multidimensional activities of universities in regional innovation system and requires clarification and adjustments.

The most obvious results and effects of R&D university spillovers are:

- the growth of research, patents and publication activity of researchers and scientists in the region, conducting a wide range of basic and applied research and intensive research capacity building;
- effective transfer of technologies into the economy and the growing number of regional innovation infrastructure organizations integrated with universities (business incubators, technology parks, centres for the collective use of technologies), created in the framework of partnership interaction on the basis of technology platforms with other universities, research institutions, authorities and business;
- growth of financial flows of higher education institutions aimed at research and development through the creation of a multi-channel system for attracting financial resources and the effective use of public-private partnership opportunities;
- increase in the number of subjects of innovative entrepreneurship in the university “belt” of small high-tech companies focused on the needs of the regional economy;
- integration into the interregional and international research, innovation and educational space, the creation of international research teams to conduct joint research and achieve international level results.

2.2. SPESIFIC AND PROBLEMS OF R&D SPILOVER MEASURING

R&D spillovers have been actively studied in economics over the past decades. A significant contribution to this was made by the classic works of famous scientists [5-7]. A stable terminology and research methods for spillovers effects and externalities of innovation diffusion have emerged based primarily on the use of econometric tools and mathematical

formalization to assess the impact of such effects on the economic growth of a territory. These works largely served as an impetus for the coordination and development of state innovation policy in developed foreign countries.

To define and evaluate the influence of university on the regional innovation development and R&D spillovers of their activity researches use various models that allow analyzing the contribution of the university to the socioeconomic and innovation development of the regions.

Usually the spillover effects and level of universities impact on the regional innovational development is quantitatively evaluated in long-term period on the basis of extensive observation. Structural factors which determine the impact of university on the process of innovation developments are highlighted. The correlation is considered between funding of the universities and its results by measurable indices such as quantity of scientific stuff, number of the patents, costs of scientific researches etc.

To measure the impact of the university on the innovation development of the region researches usually use regression approach and log-linear relationship with application of neoclassical production function like Cobb - Douglas function, which appears from a thesis that various factors, which combine multiplicatively, create innovative outcome of the university [5-7].

Moreover, the main index of the outcome, effectiveness, universities' researches and innovations is patent activity. But these approaches to assess the role of the university in regional development do not consider relations between actors of regional innovation system.

Also such an approach in the study of spillover effects in modern conditions strongly depends on the availability and quality of selected variables, is limited to the first stage of the innovation process and does not consider the next stages of the innovation process and the diffusion of innovations in the region following patents.

Because of peculiarities of patent procedures, low development of patent law in countries with an unsettled system of patent law and lack of specific data for patent analysis, for example, in Russia, these models are available with significant limitations.

The present study continues to search indicators and qualitative characteristics of university's influence and R&D spillover on the regional innovation development and we extending the framework and focus of spillover oriented research.

Methodological questions of R&D spillovers assessing were not elaborated, this kind of assessing the R&D spillover on the regional innovation development was not executed before, the present study is pilot one.

2.3. ASSESSING OF UNIVERSITY'S R&D SPILLOVERS IN REGIONAL INNOVATION DEVELOPMENT

To develop the methodology of assessing R&D spillovers and contribution of the university to the innovation development of the region it is supposed to stipulate basic indicators, which show quantitatively how university's results affect regional development.

Assessment of innovation development efficiency requires application of specific indicators like system of quantitative and qualitative performance indices of the universities that affect regional innovative development.

The following indicators have been chosen as determinant indicators that allow adequately statistically measuring R&D spillovers. With their consideration, it is possible to present an algorithm for estimating R&D spillovers (table 1).

Table 1. Spillover effects indicators by the stages of the innovation process

Stage of R&D	Basic research	Applied research	Development	Commercialisation	Diffusion	Consequences
Stage of analysis	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Types of spillover	Short- term (1-2 years)	Medium-term (2-5 years)	Medium-term (2-5years)	Long-term (5-7 years)	Long-term (5-7 years)	Extended (7-10 years)
Results and spillover effect indicators	Growth of publication and number of publications activity of university researchers	Growth of patents activity and developed advanced technologies	Growth of research contracts with regional companies	Growth of share of R&D income in total universities income, growth of innovations share in small companies and GRP	Growth of the objects of innovation infrastructure, small innovative enterprises, spin-off, etc.	Attracting finance to the regional R&D, creation of new generations of innovations, growth of labour productivity, economic growth, structural changes in regional GRP

3. EMPIRICAL ANALYSIS

As objects of the study we analyzed performance indices of the universities and indicators describing efficiency of innovation activities of Russian regions.

Informational background of the present study is represented by Federal State Statistics Service and Informational analytical materials of Ministry of education and science of the Russian Federation for 2005 – 2016 (latest available GDP data for 2016) [9].

In the economic reforms in Russia over the past 20 years, a course for the development of innovations was determined, and large-scale structural changes were implemented in the sphere of higher education and science, and numerous scientific and technical programs were initiated. The level of financing innovation has increased from 2005 to 2016 by 5.2 times, or from 2.19% to 2.45% of the federal budget, or from 0.36% to 0.47% of GDP [9]. A tool for evaluating the effectiveness of public policy can be spillover oriented approaches.

We have tested the proposed methodological approach to the analysis of R&D spillover effects on the performance indicators of a regional innovation system and structural changes as changes in the structure of industries of a regional gross regional product under the influence of state policy results on Russian data.

For the analysis, 18 regions with high innovative activity were identified in terms of from 10.1% to 27.5% of the volume of innovative products in the region's GRP (table 2). For information, the average percentage of innovative products throughout Russia was 8.2% in 2017.

These regions are the leaders of innovation development, they have a formed system of institutions of higher education and a sufficient development of the economy system, and they can track spillover effects in contrast to less innovatively active territories. The results of the analysis for stages 2,4,6 of the innovation process from table 1 are presented in Figures 1-3. Regions are ranked by decrease of indicators in 2017.

Table 2. Innovative active regions of Russia, 2017

Regions	Share of innovations in GRP, %
Republic of Mordovia	27,5
Khabarovsk region	23,8
Republic of Tatarstan	19,6
Perm region	16,0
Samara Region	15,6
Nizhny Novgorod region	15,4
Arkhangelsk region	15,3
Mari El Republic	14,2
Krasnodar region	14,1
Ulyanovsk region	12,8
Tula region	12,7
Chuvash Republic	12,2
Yaroslavskaya oblast	12,2
Belgorod region	11,6
Udmurtia Republic	10,8
Rostov region	10,6
Sverdlovsk region	10,3
Penza region	10,1

Comparing the analyses of regions in terms of their impact in different regions of the Russian Federation we revealed a high degree of differentiation and polarization of these systems. In particular, the region's leading in terms of funding, the number of researchers and students are as well the leaders of economic development and intellectual centres. These regions are characterized by high innovation activity, well-established interaction among the actors in the regional economic system, developed cooperation links with universities, and have well-balanced proportions for the implementation of the basic functions of the regional system of higher education. Regions with a low rate of economic development, low innovation capacity are characterized by an imbalance in the basic functions of regional higher education and innovations systems. The scientific and regional partnership functions

are not sufficiently developed in these systems. So, tracing innovative chains and diagnosing spillover effects are more difficult.

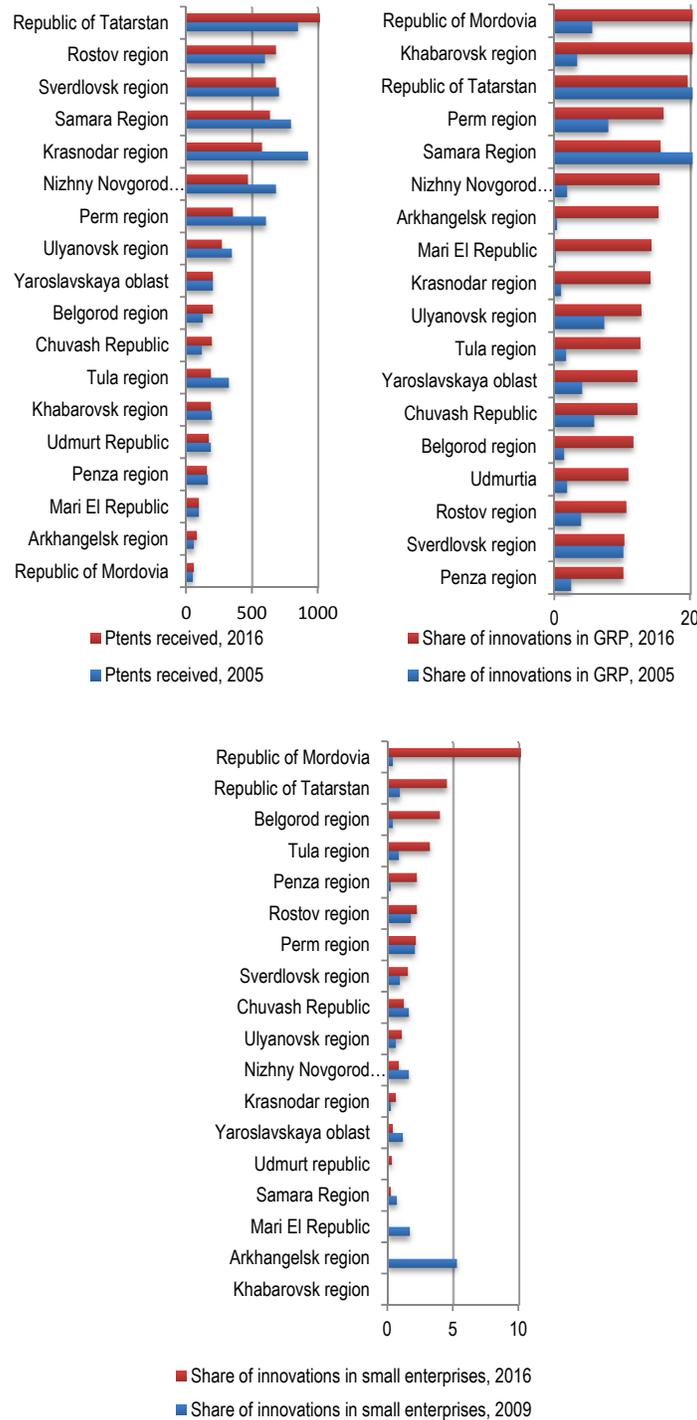


Fig.1 .Dynamics of patents received, share of innovations in GRP and share of innovations in small enterprises, 2005-2016

The most significant structural changes in the structure of the industries from 2005 to 2016, which caused positive and negative trends in the development of the economic structure of the regions, occurred in the following sectors:

- real estate and rentals: +3.7%;
- public administration and social security: + 1.5%;
- health care and social services: + 0.6%;
- transport and communications: - 2.2%;
- agriculture: -1.3%;
- trade and household services: -1.3%.

We presented graphically multidirectional structural changes in the gross regional product of the 18 regions in the main sectors in which significant changes took place (fig. 2-3).

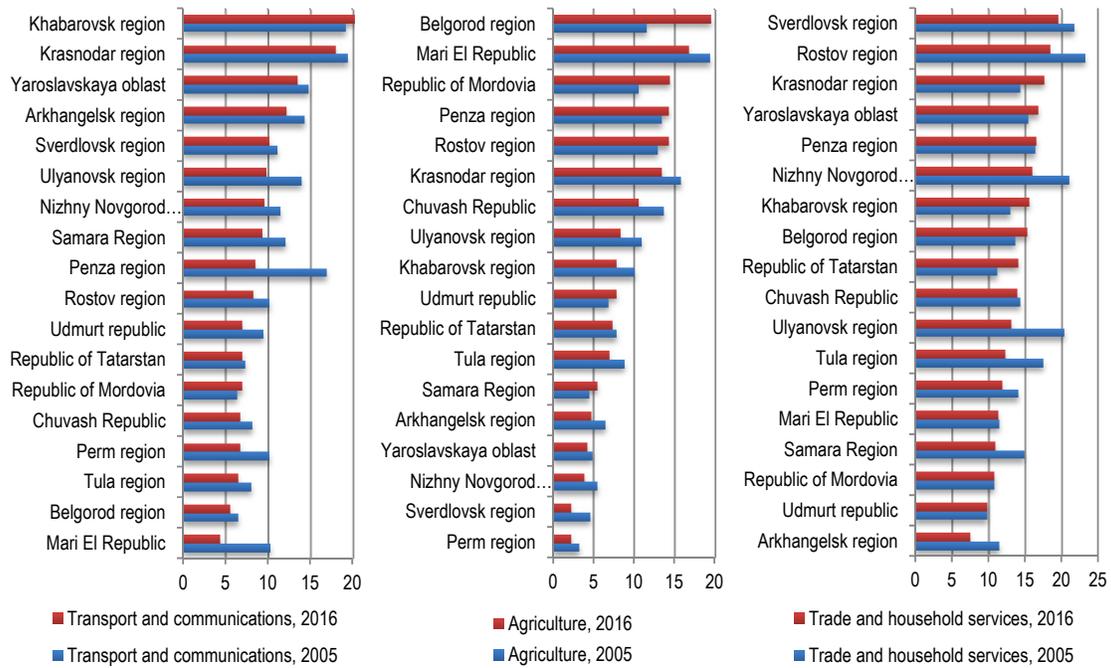


Fig.2. Industries whose share in GRP decreased from 2005 to 2016

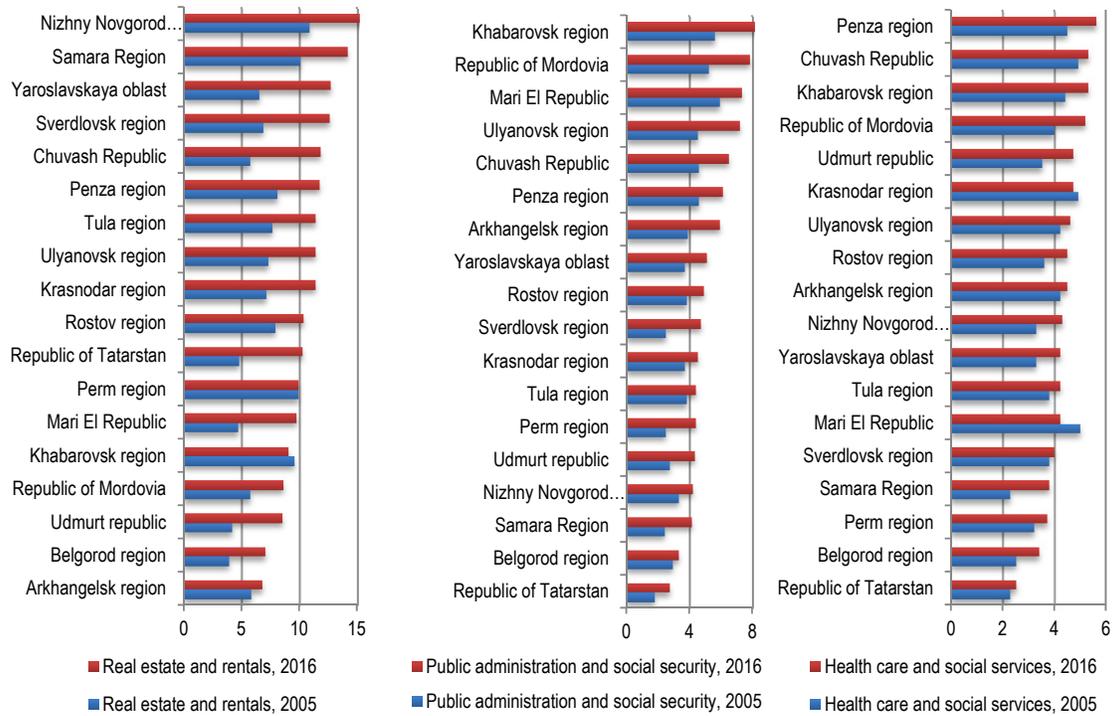


Fig.3. Industries whose share in GRP increased from 2005 to 2016

In the proposed approach, it is possible to see in detail the results of the growth or decrease of the indicator as a whole or for each industry of the regional economy and structural shifts 2005-2016 years.

4. CONCLUSION

The conducted study allowed to determine the indicators of R&D spillover of the universities and innovation development of the 18 Russian regions.

The obtained results of the study give the possibility to present the detailed and objective assessment of the influence of universities on the regional innovation development. It gives strong potential in estimating efficiency and quality of innovation development of the region for the purposes of monitoring their investment perspectives and public management.

The scientific significance of research results is that the offered approach can act as one of mechanisms of analyzing the trends of innovation development while managing innovation activity and generating procedures of macroeconomic forecast and planning versions of sustainable innovation development of the regions.

The practical importance of this toolkit is to apply it in the implementation of structural policies and justify the goals and nature of structural changes, identify a set of measures to support the development of those elements of the economic system that ensure economic growth, develop a general strategy to maximize economic growth and a set of measures state, aimed at the implementation of state innovation policy.

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DEVELOPING AUDIT FUNCTIONS IN TRANSITION COUNTRIES AS PART OF IMPROVING THE MANAGEMENT AND FUNCTIONING OF ENTERPRISES

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Abstract: *The quality of internal audit work in transition countries depends on the application of the rules and methods of applying internal audit, but also on the full engagement of the auditor as a professional.*

Professionalism depends to a large extent on the objectivity of the attitudes and the judiciary auditors, the quality consideration in the application of audit standards, as well as the impact and practicality of the audit recommendations.

Internal audit does not have the role of inspection. Internal audit requires co-operation of employees and management in order to obtain a sufficient amount of truthful data required for the performance of the audit function. The best way to maintain an atmosphere of mutual trust and cooperation is that internal audit adopts a "participative" approach, to be transparent in its work and goals and to maintain professional relationships at all times.

Compliance with the requirements stated in the paper indicates the importance of ensuring a high standard of internal audit. However, since the revision is more "art" than science, the goal of the author of the paper is not to mechanize the audit process, but that the professional court of the auditor itself becomes the basic feature of the implementation of internal audit in real economy.

Key words: *business, decision, company, management.*

1. INTRODUCTION

An audit should be viewed as a process of possible improvement of corporate governance. [1], [2], [3], [4], [5] that draw the attention of the professional public to such importance of turning around with internal and external ways of using the audit in order to improve the work of the company [6], [7], that is, to increase and achieve better results of the business of managing transitional enterprises.

Corporate governance should be seen as a process where the company's goal is to achieve the maximum effect of achieving management's results by improving the business

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results of the company, and where the internal factors of the organization can contribute to the development of overall corporate governance.

Adoption of audit recommendations as a profession contributes and can be used by top management as a way to improve business operations in an enterprise. The whole process should be viewed as a total business improvement [8], [9], [10] companies with the goal of maximizing profits.

Modern approach to management requires new approaches to business advancement where a significant place can occupy both the audit profession [11] and the operation of a large number of non-standard ways of improving corporate governance [12], [13], [14] such as auditing.

Recommendations of internal audit may mean achieving benefits for the management functions of different parts of the company [15]. Improving management decisions should be seen as a process rather than a current state where top management must work continuously to generate profit [16], [17], [18], [19], [20].

The essential establishment of control can be of great importance in the system of organization, especially in the system of primary production, for example in the organization of agricultural production of a very wide spectrum of economic existences [21], [22].

Thus, observing the audit as a profession and the work done by professional staff are of particular importance and importance, especially for transition countries on the path to joining the EU.

2. VIEW THE FLOW OF AUDIT JOBS IN A TRANSITIONAL COMPANY

The authors point out that it is very important that auditors apply the following three types of activities and activities:

1. The audit should be adapted to the circumstances of the audit entity itself and be based on an audit risk assessment;
2. Providing an opinion on internal controls is not the sole objective of the public sector audit; examining the corporate governance structure in the audit entity and examining performance management in the medium term should become equally important;
3. The findings of the audit should be timely presented in the report in order to ensure the timely take-up of appropriate activities.

The internal audit should be based on:

1. Full implementation of the prescribed procedures to be applied by all employees in internal audit in the public sector and state organs of the government of Serbia.
2. Application should represent a common reference basis for internal auditors, written procedures should facilitate auditors to understand the principles of modern audit techniques and new terminology, and to assist them in performing auditing duties.
3. The procedures and methodologies contained in the procedures should comply with the international standards of professional practice of internal audit, established by the International Institute of Internal Auditors (IIA). These standards are adapted to be relevant to the public sector in Serbia, and can also be applied in other transition countries.
4. Procedures are submitted to all internal auditors in the Ministry of Finance and other

budget users.

5. In order to ensure that methodologies and procedures are in line with best practice and reflect changes in the legal and audit environment, the central unit for harmonization within the Ministry of Finance is in charge of reviewing and, if necessary, modifying the content of methodologies and procedures. Such inspections will be carried out once a year and, if necessary, more often.

6. However, the chief of the internal audit service is required to adapt certain parts, where necessary, so that they correspond to local circumstances; for example, to include a specific organizational structure, or systems of the appropriate direct beneficiary. However, it is imperative that any change be considered and agreed with the Central Unit for Harmonization at the Ministry of Finance.

7. Each auditor shall ensure that all changes in terms of methodology and practice are understood and entered into procedures that are adopted by those who require the implementation of internal audit.

8. The Central Unit for Harmonization at the Ministry of Finance will be ready to consider the suggestions of direct beneficiaries in terms of improving the procedures and methodologies contained in the adopted internal audit procedures with the beneficiaries.

The structure of procedures has four parts:

- The first part refers to the adopted principles, standards and policies of internal audit, which provide guidance for key policy issues related to internal audit and internal audit management,
- The second part refers to the system revision, which explains the steps to be followed in the audit of the system,
- The third part refers to internal audit skills, which is a guide to a range of interpersonal skills and techniques that internal auditors need to know, and
- The fourth part includes internal audit tools (tools) that contain basic audit tools and other guidelines that should facilitate the performance of some of the most common revisions.

The auditor is expected to follow the instructions and where possible the approach and techniques specified in the prescribed internal audit procedures.

The authors give an overview of the model of impact of audit jobs or professions in general management in the company. The display is given as a figure 1.

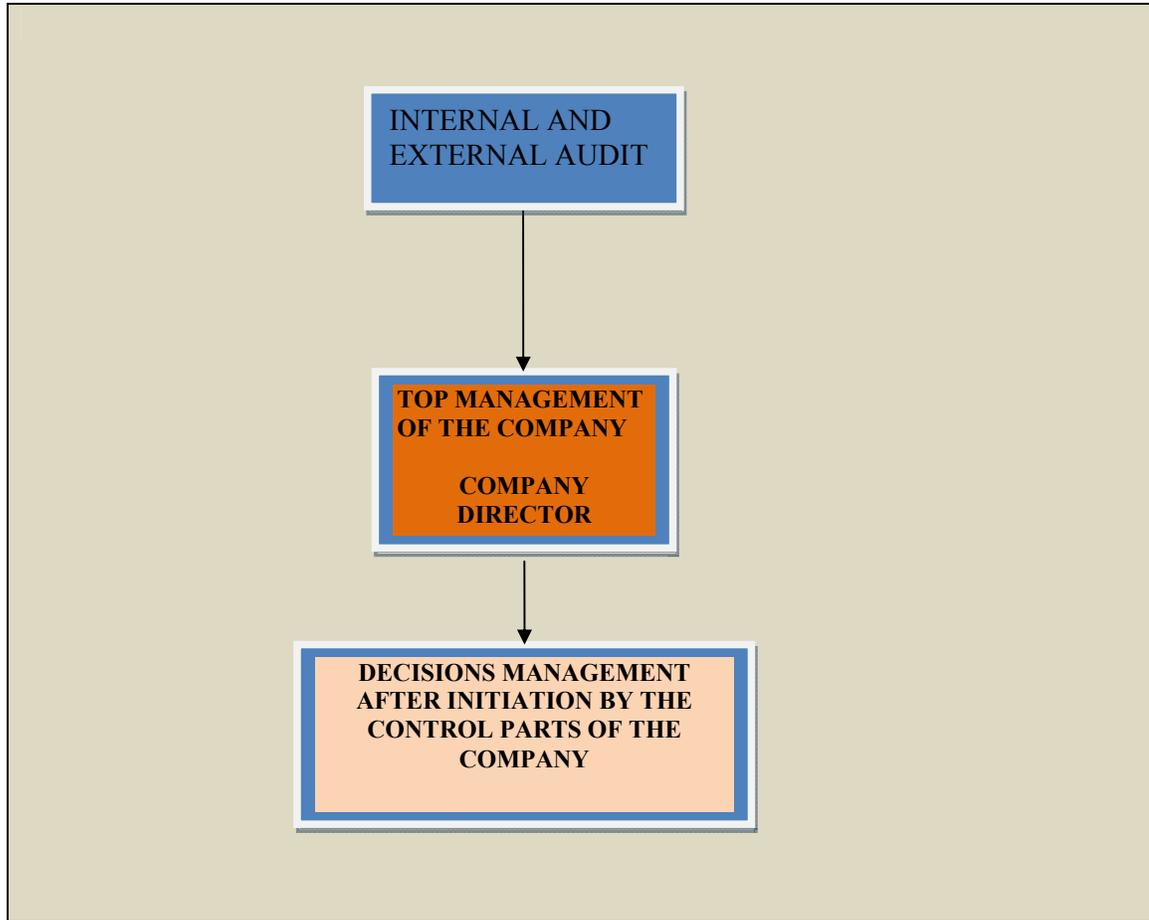


Fig. 1 Model of harmonization of control mechanisms in the Republic of Serbia

3. REVIEW OF STANDARDIZATION OF AUDIT, RISK AND TIME OF OPERATION TOWARDS MANAGEMENT

Modern business requires fast operation, but also an approach where basically define approaches to job standardization, operational description, risk, and speed of action towards management.

The general model of application is given by authors as a general approach to the theoretical model of behavior in the company.

The general model is given in Table 1, Table 1.

Table 1 Form of standardization with description of control and possible level of risk per enterprise

FORMS OF STANDARDIZATION	REQUIREMENTS REGARDING THE PERFORMANCE OF CONTROL AND AUDIT	POSSIBLE RISK LEVEL PER COMPANY	UNDERTAKING MANAGEMENT ACTIVITIES
Attribute standard	Applying standard requires a professional attitude, competence and professional care, competence, knowledge and other competencies to perform internal audits.	medium	directly after the knowledge
Implementation standards	The auditor must obtain help, if there is no knowledge, skills, or other competencies needed to perform all tasks related to the audit or his involvement.	high	immediately
Performance standards	The auditor must effectively manage internal audit activities. Must plan and prioritize internal audit, based on the assessed risk.	high	immediately
Implementation Standards - advice	The auditor should consider accepting proposed involvement in the assessment and should propose improving the organization of the subject in which audits. Data Solutions suggestions.	high	immediately

3. CONCLUSION

By this work, the authors point to the importance of the audit principles, standards and policies of the audit, which are guidelines for policy formulation related to the management of audit jobs. Thus, the authors emphasize the importance of doing business and audit jobs in companies.

In addition, the authors emphasize the significance of system revision, which influences the steps to be followed in the system audit in the enterprise.

The authors also emphasize the importance of auditing skills, which is a guideline for a range of interpersonal skills and techniques that auditors should know and apply in the processes of entrusted audits of transition countries.

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