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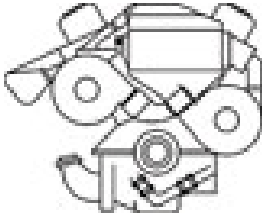
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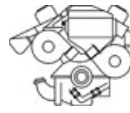
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Welcome to the sixth issue of the MEST Journal, an international peer-refereed academic journal, official journal of the non-profit organization MESTE, and the Faculty of Business and Industrial Management of the "Union – Nikola Tesla" University in Belgrade, and the SZ & Associates - Toronto. This issue is published online and in print

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We keep the practice that articles, that have undergone peer review, and will be published in the next issues, we make available to readers in the form of preview - early reading. The focal point of the journal remained at international level, with the view on matters from a global perspective. However, due to their importance, in this issue have been published some papers relating to some specific local events.

In this issue fifteen of submitted papers were published, of which six were classified in the group of research scientific papers, seven in the group of scientific review papers, and two in the group "Case study". Most of the articles is multidisciplinary. However, four papers could be classified to the area of finance, and three to the field of management. Other articles belong to groups of economics, law, technology and modelling, and IT, two in each.

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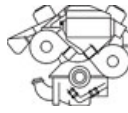
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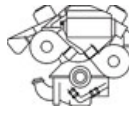
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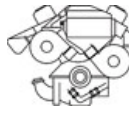
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DEVELOPMENT OF THE ORGANIZATIONAL FINANCING MECHANISM OF INVESTMENT PROJECTS

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Maikop State Technological University, Maikop, Russia

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Abstract

This article contains the analysis of one of the most burning issues of economic development of Russia – formation of the innovative sphere. On its basis experience of the state economic policy directed on creating favorable conditions for attraction of investments is considered. In this regard by reasoning and research of innovative system of the Russian Federation the main signs, the principles and indicators of innovative economy are allocated, existing problems in this sphere are revealed, Besides, need of participation of insurance as economic category in development of innovations for the purpose of minimization of economic risks is confirmed, the mechanism of introduction of insurance of risks in system of financing of innovative projects is shown.

Article also raises the questions of need of development of essentially new innovative security as attempt to develop the investment sphere in innovative projects for attraction of additional financial sources. Stages and the mechanism of functioning of the developed security are for this purpose designated, the characteristic features distinguishing this security from others are defined. In article the attention to need of creation of a platform for implementation of innovative projects with already allocated basic functional elements is focused.

The general result of article are offers on realization of the developed methodology on functioning of an innovative security that, in turn, will give the chance to businessmen innovators to attract investments for implementation of the projects, and investors will gain additional income with minimization of risks by means of insurance that, as a result, will allow to increase competitiveness of economy of the Russian Federation in the world market in the conditions of world globalization.

Keywords: *Innovations, innovative projects, investments, the insurance of investment risks*

1 INTRODUCTION

Currently, in The Russian Federation, the effective functioning of the innovation system is one of the

most important issues for the entire national economy, because the competitiveness of domestic products depends on the performance of this field. Attracting of investment and innovative resources has a direct impact on employment of the population, creates the necessary conditions for dignified life.

Moreover, as the analysis of Russian innovation

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processes shows, innovation financing mechanism works unsatisfactorily. This is confirmed by the statistical data: in developed countries 70-75% of investments in innovation is in the private sector equity, commercial banks give a credit on 25-30% of expenditures on R&D, and in Russia the same figures are 40 % and 5-7 % correspondently.

I would like to note that one of the factors for the implementation of effective innovation is the development of serving market infrastructure. Without minimizing the importance of other factors, we note that domestic business realities dictate the rules for building a sustainable and effective innovation infrastructure.

We should note that in the Russian Federation the investment sphere at the enterprise level is presented as fragmented and underdeveloped market of investment resources, which works inconsistently and ineffectively. Poor development of market information infrastructure of the market prevents the interaction of domestic producers and potential investors. That's why it is necessary to include a new player in the investment arena - insurance companies. Enhancing of the role of insurance companies in investment insurance seems relevant, that will result in:

1. creation of insurance pools and cooperation (including international insurance companies) to rank the insurance risks of major investment projects;
2. significant expansion of the boundaries of reinsurance. (Prigoda, 2011)

However, at the present stage of development of insurance products investment insurance has not received adequate attention from the Russian insurance companies yet. For developed countries the active participation of insurance companies in the investment process is typical, where they act as investors, providing a third of all investments in their countries. In the West insurance covers 90-95% of all possible risks, while in Russia it is below 7%. Among the main causes of this are:

1. lack of state financial support for Russian insurers;
2. lack of internal resources to take responsibility for major risks;

3. underdeveloped infrastructure, which would guarantee the proper pre-insurance expertise of investment claims;
4. inexperience and lack of qualified personnel.

According to some researchers as Toffler (1992), Fukuyama (2014), Bell (1980), Naisbitt (2010), and others, most of the developed countries in the world, with innovation-oriented economy, have their global economic supremacy just due to the implementation of successful policies in the field of innovations. Analyzing it, we can conclude that many scientists have similar opinion in identifying and naming principles, signs and indicators of the innovation economy (Figure 1).

2 DISCUSSION

The innovative economy has its own tools, system of tasks and priorities. At the same time, a feature of the national innovative economy in Russia is that the "end" objectives is virtually impossible to achieve without the organization of a favorable investment climate, a guarantee of quality implementation of basic economic rules, a competitive environment for creating market-based incentives to innovations and solving a number of other key problems in the sphere of institutional infrastructure building. Among the most profitable and stable I single out investments in securities with fixed interest. In Russia, bank deposits dominated until recently, but with a decrease in bank interest priorities have shifted to government securities. The solution to the problem of investment activity in Russia, in our opinion, will become the investments in securities of enterprises.

Investment risk is associated with the specific of business company investments in various projects. Actually financial investments are transactions in order to obtain speculative income. The investor usually has risks of these transactions, and practically the only protection against them is the reputation and the guarantee of the borrower or issuer of the securities specified in terms of production or loan agreement. Insurance of such risks increases in demand in the market.

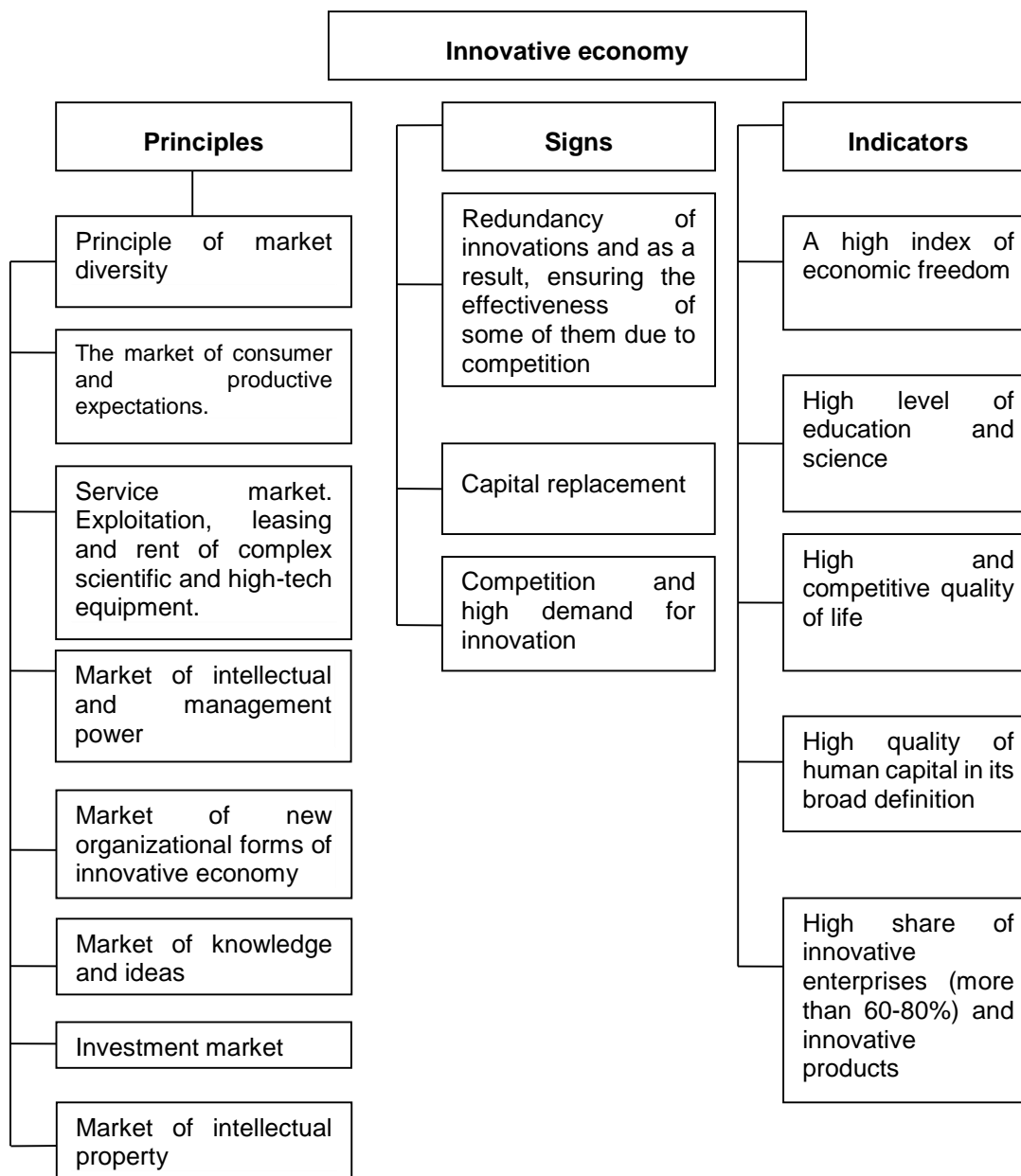


Fig. 1. Basic principles, signs and indicators of innovative economy

(Source: Author)

In modern conditions, part of the financial market is the securities market, which provides the fastest spillover of financial resources to investments. It allows companies to raise significant amounts of money on any time and usually on more favorable terms than a bank loan. In this regard, task solution for development and implementation of a mechanism for raising investments in innovative

business characterized by its novelty seems appropriate. This mechanism is based on the issue of securities, which allows intensifying investment activity of big players and small players, including individuals. The stages of development process, issue and placement of securities are shown in Fig. 2.

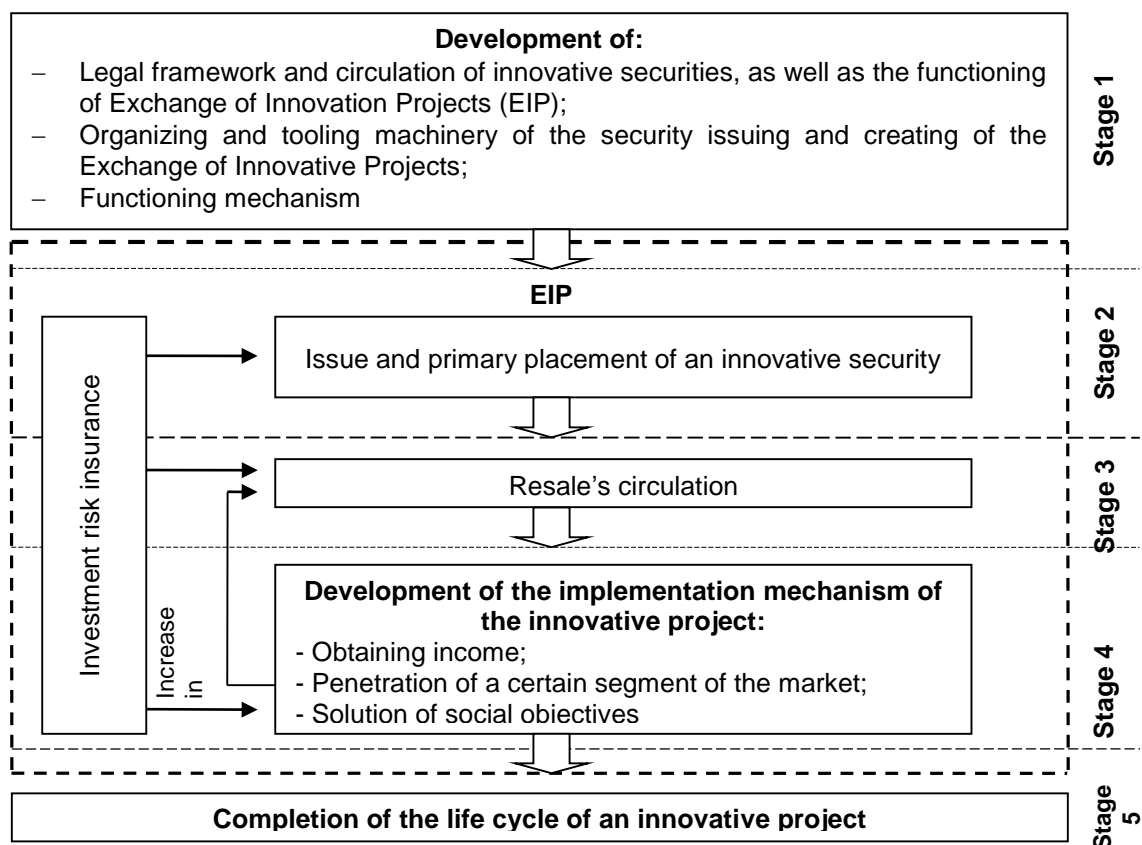


Fig. 2. Stages of the development process of development, issues and a the placement of an innovative security (Source: Author)

We will discuss each stage in details.

2.1 Stage 1

For the purpose of fund raising a company-innovator is asked to produce issue of innovative securities, which give the investors the opportunity to share in the project, developed by the issuing company. In practice, this kind of security paper does not exist. In this regard, we consider that it is necessary to make the development of the mechanism of emission and circulation of innovative security Single.

Single is a security that reaffirm the share participation of its owner (investor) in the company-innovator (the issuer) project, who has issued a given security. When the project will generate income, the issuer agrees to pay the interest, which will depend on the demand for the product. The Single will have characteristic

features that distinguish it from other types of securities:

- the ratio of investor share participation in the project. Person who has acquired Single, is not a co-owner of innovative company but becomes a co-owner of the project developed by this company;
- circulation period. The Single expiration date is equal to product life cycle, based on the innovative project;
- yield of a security. The size of interest payments on Single will be directly proportional to the demand for innovative product made within the project;
- liquidation procedure. In case of project liquidation Single holders are not compensated for investment expenses.

The company resorts to the Single issue to attract additional investments.

2.2 Stage 2

Project life cycle begins with the issue - the process of single documenting and putting into circulation. As a result of the issue and placement in the primary market innovative security finds its owner (individual or legal entity). After the Single is sold in the primary market, it goes to the new owner and thus completes its first cycle of circulation.

Moreover, investment risk insurance on securities is implemented at this stage. This element extends through all remaining stages of "life" of the security, as any work with something new involves a certain degree of risk and can lead to financial losses. To avoid this, we invite the investors to protect themselves by compulsory risk insurance. (Federal law, 2015) It should be noted that insurance coverage for investment insurance in the Single will be based on one of the following objects of insurance:

- annual income of the investor;
- the difference between the dividend amount and actually received dividend payout;
- revenue for the entire period of project "life" by Single;
- the risk of losing the capital invested in the purchase of Single.

The main task of the primary market is to ensure a flow of financial resources for issuers. When

issued Single start further movement in the securities market, they appear on the secondary market.

2.3 Stage 3

Single placement on the secondary market. Since Single is a security specially created to reflect the share participation of the investor in the company-innovator projects and acts as a special tool, hence the organizational structure of the secondary market on which innovative companies will focus, should be specially designed.

We propose to develop a qualitatively new platform for the implementation of innovative ideas - Exchange of Innovation Projects (EIP) to accommodate Single, thus the project will find its investors.

The main objective of the creation of EIP is joining of companies- innovators, which wish to obtain financing for the development of their innovative projects by placing Single and investors who have temporarily free resources and are willing to invest in Single of effective and innovative projects. EIP would "put out" inefficient projects by special methods of examination conducted by its structural element, that will protect investors from undue risk of losing their investments.

The main parts, the main functional elements of the EIP are presented on Fig. 3.

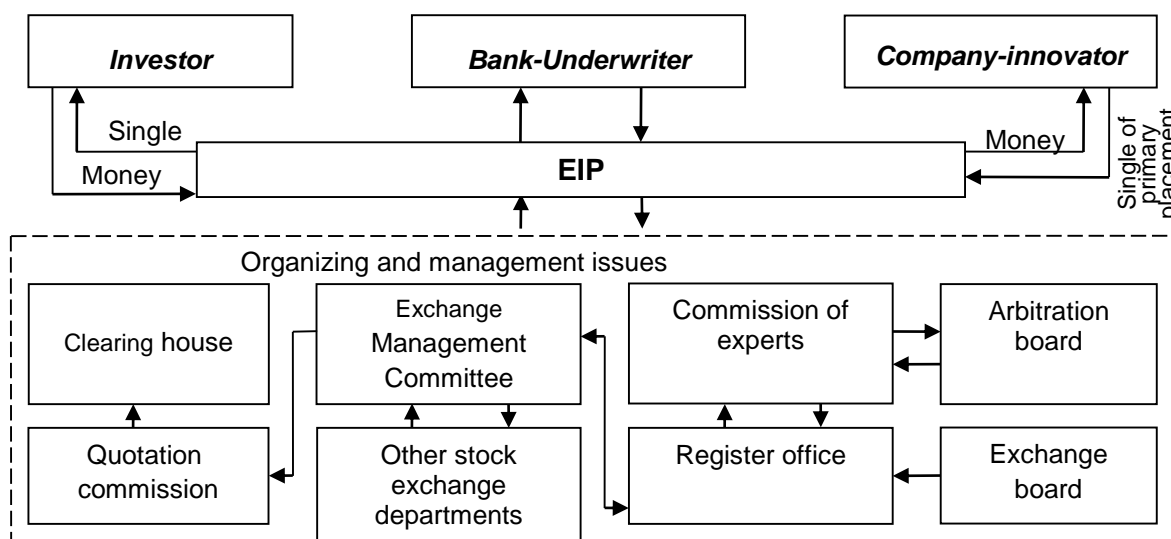


Fig. 3 EIP functioning model (Source: Author)

Investors of innovative projects can be:

- legal entities;
- individual entrepreneurs;
- commercial banks.

Everything is clear with legal entities and individual entrepreneurs, but the place of a commercial bank within EIP is ambiguous, since the bank can perform two functions:

- act as investor by acquiring Single projects, which are already posted within EIP;
- act as underwriter.

Let us dwell on the second option, since it is the topping. Bank as underwriter is a professional member of EIP and performs the following functions:

- consideration of the application and business plan;
- carrying out input, scientific, technical and investment expert examination, reference of a project to the regulatory body of EIP;
- listing procedure;
- Single issue on behalf of the company-innovator;
- preparation of issuing documents;
- preparation of memorandum;
- marketing and preparation for placement on EIP;
- placing on innovative platform.

Valuation of the company is based on the process and generalization of the following information:

- risk is determined on the basis of the significance of the economic sector;
- market condition;
- production efficiency - the ratio of costs and benefits;

- management - results of financial transactions;
- accounting - general evaluation of the use of accounting methods and reflection completeness of the financial condition;
- profitability - basic measurements characterizing the company's efficiency in the long term;
- financial solvency - the ratio of total debt to equity capital, and etc.

Acting as underwriter, bank-investor adopts a role of mediator, guaranteeing a certain amount of Single redemption for himself and public offering of the rest part on EIP.

Thus, the company-innovator immediately receives a share of investment from the bank, and then the remaining amount on the placed Single from foreign investors, attracted by the bank-underwriter.

If the company-innovator decides to repurchase issued Single due to the improved financial position and ability to independently conduct its business or other reasons, the investor has the right to sell Single at a price fixed at the date of sale. The difference between the purchase price and the selling price will be the investor's gain (expense).

The advantages of bank-underwriter participation in company-innovator project investment are presented in Table 1.

Table 1 The advantages of bank-underwriter participation in investment process (Source: Author)

For company-innovator	For bank-underwriter
Qualitative assessment of the financial condition due to the bank-underwriter analysis	Opportunity to select the most promising developments
Accelerated and simplified procedure of listing	Commission remunerations for underwriter services
Time saving for preparation of relevant documentation for Single issue	Risk ranking by simultaneous investment in multiple projects
Issue of Single by bank on behalf of the innovator	Revenue from project implementation, margin
Single placement by bank on EIP	Rating change towards quality improvement
Acquiring of part of the investment from the bank within the specified period	Increase in the customer base
Settlement, cash, exchange and other services at special rates	Income from providing settlement, cash, exchange and other transactions

Underwriters act as intermediaries between the end investor and company- innovator connecting their interests and at the same time as the authorized representatives acting on the stock exchange as trustees of owners of implemented innovative product and its buyers.

Thus, the underwriter carries out its activity for and on behalf of the client, their relationships are based on a contractual basis. Underwriter's income is formed by the commission fees of the sum of transaction.

2.4 Stage 4

This stage includes a development of a mechanism for the implementation of an innovative project that describes the system of income generation, strategy to gain a particular market segment and aimed at solving social problems.

Income by Single consists of:

- income in the form of interest accrued and paid on a monthly basis from the date of the project recognition on the market;
- income in the form of discount, which is a positive difference between the purchase price and the redemption price of investment security.

Procedure for interest payment by Single is:

- the source of income payment by Single is net profit;
- in case of absence of net profit, the interest payment shall be suspended until it becomes available;
- if there is no interest payment (systematic), it can serve as a recognition of inefficiency of the project. As a result, the project may be suspended or removed from sale.

Investments in specific projects by security Single can be protected by insurance. Typically, this type of insurance is expensive because it requires a complex and expensive pre-insurance expertise, which in turn greatly reduces the investment return. Therefore, Russian insurers are just beginning to insure investment risks. We do offer to make risk insurance associated with the implementation of investment project mandatory.

Innovative risk insurance must be considered as a special kind of insurance. This insurance includes

all types of risks that arise during the creation, development and embedding of innovative activity objects. Therefore, special attention is paid to the interaction between the insurer, company-innovator and reinsurance company.

2.5 Stage 5

The completion of the life cycle of an innovation project. After a certain period of time projects tend to end (each project has its period), when all objectives are achieved. There are cases when the end of the project is sudden and premature, including cases when the decision to stop the project until its completion on schedule is made. The final stage of the project life cycle is its obsolescence, a significant decrease in the practical application. At the final stage, as a rule, the project is replaced by more improved one.

The application of the developed tools for ensuring sustainable development of the company on basis of formation and use of monitoring system of innovative capacity in practice let to reasonably review the strategic guidelines of innovative enterprise activity on innovation and gain economic benefits, expressed in the sustainable development of the enterprise, strengthening its position in the market, increasing the efficiency of its operation.

3 CONCLUSIONS

Based on the foregoing, we can draw the following conclusions.

Russia failed to bring science and private sector to one level. And today it is a fundamental task for Russian politicians. Investing in investments is one of the most advanced areas to ensure the development of broad innovative activity in the country.

It is necessary to create a special innovation infrastructure for the innovative economy development and stimulation of the process of new markets formation. On the territory of the Russian Federation innovations are created, often surpassing their Western analogues, both in quality and in low price. The problem is that in reality the system of scientific and technical analysis and search is not completed. In order to solve this problem, as a result of our work the

mechanism for attracting investments in innovative sphere was developed, namely:

- innovative security Single, that gives the opportunity for investors to share in the project developed by the issuing company is developed;
- issuing mechanism and innovative security circulation is thought over;
- organizational structure of a qualitatively new platform for the implementation of innovative ideas - Exchange of innovative projects (EIP) to place innovative security (Single) is developed;
- mechanism for the implementation of innovative project is designed:
 - income generation;
 - occupation of a certain segment of the market;
 - the solution of social problems.

Despite all the problems that accompany the introduction of innovative risk insurance in the Russian practice, it appears that the demands for insurance in The Russian Federation are objective, and sooner or later there will appear the interlayer of reasonable entrepreneurs who will be able to properly assess their risks and opportunities, realize the profitability of development of innovative risk insurance, and this type of insurance will get a decent practical implementation.

In our opinion, the implementation of the proposed methodology will enable entrepreneurs-innovators to attract investments for their projects, and investors will receive additional income with risk minimization through insurance, which, in turn, will improve the competitiveness of The Russian Federation in the global market.

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ELECTRONIC CONTENT COMMERCE SYSTEM DEVELOPMENT

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Abstract

Based on the analysis of the basic tasks of electronic content commerce system, instrumental means, information technologies and software for constructing of such systems have been analyzed and summarized in the article. Electronic content commerce system functional diagram with information resources processing subsystems has been developed. The overall architecture, objectives and principles of electronic content commerce system realization were described in details. The functional elements of the system were described according to GOST 24.204.80, GOST 24.201-79, GOST 19.201-78, GOST 34.602-89, IEEE Std 1233, 1998 Edition, IEEE Std 830-1998. Software creation tools as well as management and maintenance of the content, and the software realizations of developed electronic content commerce systems with information resources processing subsystems to set up e-commerce in online newspapers and journals are also presented in the article.

Keywords: *information resource, content, Web content, commercial content, content analysis, content monitoring, content search, electronic content commerce systems*

1 INTRODUCTION

The purpose of the article is to propose standardized testing methods and software processing approbation of information resources in electronic content commerce systems (ECCS).

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The formation of ECCS overall architecture promotes the generalization of ECCS information resources technique through the stages of formation, management and maintenance of commercial content in order to reduce the time while constructing e-business common systems. The implementation of ECCS contributes to the reduction of time while production of own commercial content, analysis of external commercial content from other sources,



commercial content lifecycle dynamic analysis, ECCS functioning statistical analysis, statistical analysis of information resources user activities in ECCS, increasing of information resources target audience and extension of ECCS functional capabilities. The purpose of ECCS is formation, management and support of commercial content on principles of information resources processing (Berko, Vysotska, & Pasichnyk, 2009), (Bolshakova, Lande, Noskov, Klyshynskyy, Peskova, & Yahunova, 2011), (Guide, 2012), (Clifton, 2009), (Fedorchuk, 2005), (Lande, 2006), (Lande, Furashev, Braychevskyy, & Hryhorev, 2006), (Pasichnyk, Scherbyna, Vysotska, & Shestakevych, 2012).

2 ELECTRONIC CONTENT COMMERCE SYSTEM

2.1 Characteristics of the electronic content commerce system development

ECCS is designed to create common functional requirements and standardized specifications concerning development through processing

stages optimization of the information resources in similar systems (Fig. 1). The list of tasks performed by ECCS (Vysotska, Chyrun, 2013), (Berko, Vysotska, Chyrun, 2014), (Ignify, 2014).

1. Commercial content formation (collecting data from various sources and their formation, identifying keywords and duplication, digest formation, categorization and content selective distribution, content creation, maintaining content, creation of filtering content rules).
2. Content management (databases formation/rotation and access to them, subscribing on thematic content, content distribution, personalization of users work, storing of users' requests and sources, gathering of operation statistics; search providing; output forms generation; information interaction with databases; information resource formation, formation of comments and content feedbacks, voting on content) (Vysotska, Chyrun, 2013), (Berko, Vysotska, Chyrun, 2014), (Ignify, 2014).

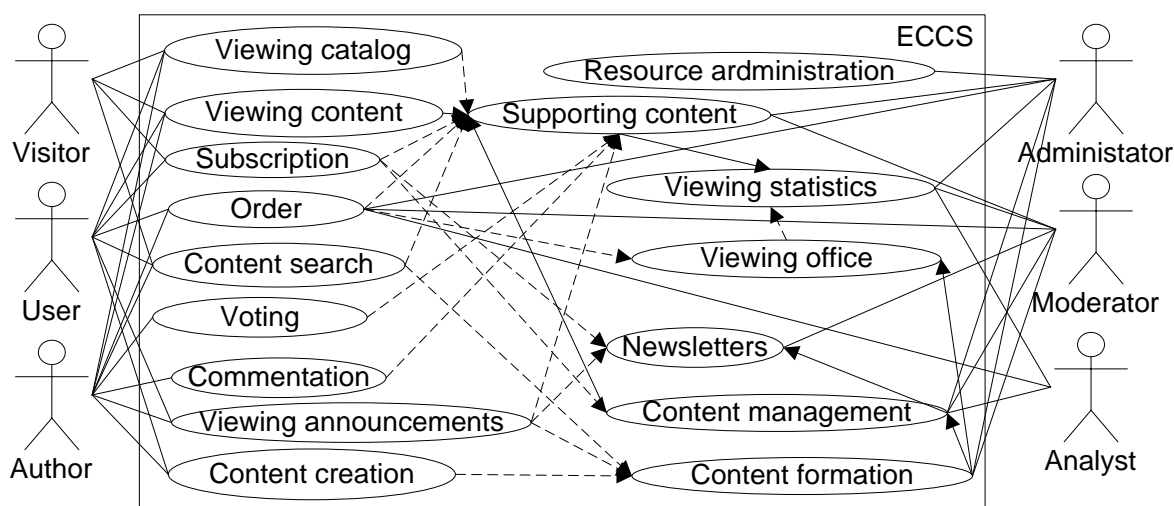


Fig. 1. Use case diagram for electronic content commerce system development

3. Commercial content support (formation of content stream portraits as well as potential/constant users and target audience; identifying content thematic subjects; formation of content relationship tables; calculation of ECCS content and moderators/authors ratings; detection, monitoring, and clustering of new events in the content streams).

ECCS is used for the implementation of e-business in information service field with active usage of the Internet technology benefits (Berko, Vysotska, & Pasichnyk, 2009), (Pasichnyk, Scherbyna, Vysotska, & Shestakevych, 2012). ECCS is designed to provide information services such as online newspaper, online magazine, online edition, online publishing, and online store for selling content etc. It's proposed to use ECCS

in order to promote services through publishing houses, newspapers, magazines, news agencies, educational institutions, software development companies or companies which sell content without media. Types of activities where ECCS is applicable: informational (publishing, address and reference, telecommunication, provider), informational and consulting (advertising, marketing, partners reliability testing, distance education) and consulting (legal, economic, medical and other types). The spheres of application of electronic content commerce systems:

1. for content online sales via online newspapers, online magazines, distance learning, online editions, online publishing, portals containing informative/ entertaining/ children's content;
2. for content offline sales via such systems as copywriting services, Marketing Services Shop or RSS Subscription Extension;
3. online stores for selling e-Books, video, software, music, movies, pictures, digital art, manuals, articles, certificates, forms, files etc.;
4. for saving of various types of content via cloud storage or cloud computing.

ECCS is intended to solve problems related to the rapidly growth of content in the Internet or in the field of e-business activity as well as widen access to information resources through the Internet, active development of e-business, expanding a set of information products and/or services, increasing demand for information products and/or services, technologies and means creation, and expansion of the scope of information resources processing methods.

2.2 Justification of ECCS formation and implementation

The lack of common standardized approaches to the overall ECCS design as well as process of information resources elaboration causes a number of issues while developing appropriate systems with typical architecture. Due to the lack of common and detailed classification of ECCS, it becomes problematic to define and form the unified methods of information resources processing in these systems. This creates

problems for the implementation of the appropriate information resources processing subsystems in ECCS such as the formation, management and support of content.

The existing ECCSs work by unknown algorithms for a wide range of programmers/specialists in the field of e-business. While creating of new ECCS the teams of specialists have to re-develop methods/information resource processing tools and content lifecycle support. Research and published materials for specialists in the field are missing. The studies concerning patterns and level of impact on the ECCS functioning relative to implement of all or some stages of commercial content lifecycle for information resources processing are missing. The analysis of ECCS functioning results aren't available because of inability to access administrative units of existing ECCS which are already known, as they are commercial products.

The novelty of project development lies in generalized typical architecture designing as well as methods, tools and technologies for ECCS creating, and implementation of commercial content life cycle stages. Implementation of formation subsystems, management and support of commercial content in ECCS leads to a reduction of production cycle and time saving while distributing commercial content, increasing of potential/constant audience and number of participants in e-business, which promotes its active development and ECCS functionality extension. The developed recommendations concerning ECCS overall typical architecture designing which differ from existing by detailed elaboration of steps and presence of sub-processing information resources that make it possible to effectively support content lifecycle at the level of systems developer (reducing the time and resources on developing, improving the quality of system operations). There were developed and implemented software tools for creation, management and support of content in order to reach a greater effect of operation at the level of owner (increasing profitability, growth of users interest) and user (comprehensibility, interface simplification, unification of information resources elaboration process and wider choice functional capabilities) of ECCS.

In order to estimate time and financial expenses for ECCS creation, there was created the enlarged plan showing each stage of solving task (Fig. 2).

This reduces the amount of time needed for drafting the project and number of project participants as well as clearly regulates the procedure of project implementation through identifying time spent on performing subtask. The amount of resources required for solving individual subtasks, roles and skills of these resources is specified in operations plan. The time schedule of ECCS development allows you to track expenses in the form of Gantt chart, which was developed by MS Project tools (Fig. 3). Precise regulation plan allows you to split the process of ECCS developing over time among

participants. Regulation of ECCS development project allows you to monitor subtasks implementation stages and connection of participants at various stages while carrying out of previous. In this plan the stages No. 2 and No. 4 are distributed among the participants at the end of stage No. 1, and stages No. 6 and No. 10 — after stage No. 5. The stages No. 7 and No. 8 are to be performed after the end of stage No. 4, and stages No. 6, and No. 7. The late implementation of the stage No. 5 leads to simultaneous delay while implementation the stages No. 6, No. 10, No. 16, and No. 20. Reducing the execution time of the phases No. 6, No. 10, No. 16, No. 20 will allow to complete the project in time, but it may lead to additional errors. The last can be eliminated at stages No. 7, No. 12, No. 15, No. 21.

Name of task	Days	Begin	End	Predecessors
☐ ECCS development project	46	10.04.13	12.06.13	
1 Data acquisition from subject domain	2	10.04.13	11.04.13	
2 Specifications of subject domain	1	15.04.13	15.04.13	1
3 Terms of Reference	3	16.04.13	18.04.13	2
4 Clarification of terms of reference through interaction with stakeholders	1	19.04.13	19.04.13	3
5 Requirements analysis	6	12.04.13	19.04.13	1
6 Analysis of the architecture of an information resource	1	22.04.13	22.04.13	5
7 The development of pattern for information resource	2	23.04.13	24.04.13	6;4
8 Development of template for content	2	25.04.13	26.04.13	7;4
9 Creating an information resource	5	29.04.13	03.05.13	8
10 ECCS architecture analysis	7	22.04.13	30.04.13	5
11 Architecture analysis of content management subsystem	3	01.05.13	03.05.13	10
12 Creating content management subsystem	6	06.05.13	13.05.13	11;9
13 Development of content database	2	01.05.13	02.05.13	10
14 Filling of content database	7	03.05.13	13.05.13	13
15 Development ECCS	8	15.05.13	24.05.13	14;12
16 Architecture analysis of content formation subsystem	3	14.05.13	16.05.13	5;9;12;14
17 Creating content formation subsystem	7	17.05.13	27.05.13	16
18 Creating a database of content sources	3	28.05.13	30.05.13	17
19 Creating knowledge base of content filter	3	31.05.13	04.06.13	18;15
20 Architecture analysis of content support subsystem	1	28.05.13	28.05.13	5;17
21 Creating content support subsystem	5	29.05.13	04.06.13	20
22 Testing content management subsystem	3	14.05.13	16.05.13	12
23 Тестування CEKK	3	27.05.13	29.05.13	15;22
24 Testing content formation subsystem	3	30.05.13	03.06.13	23;17
25 Shortcomings elimination of content management	3	17.05.13	21.05.13	22
26 Testing content support subsystem	3	05.06.13	07.06.13	21;24;25
27 Shortcomings elimination of ECCS operation	3	30.05.13	03.06.13	23;25
28 Shortcomings elimination of content formation	3	04.06.13	06.06.13	24;27
29 Shortcomings elimination of content support	3	10.06.13	12.06.13	25;26;27;28

Fig. 2. The time schedule of electronic content commerce system development

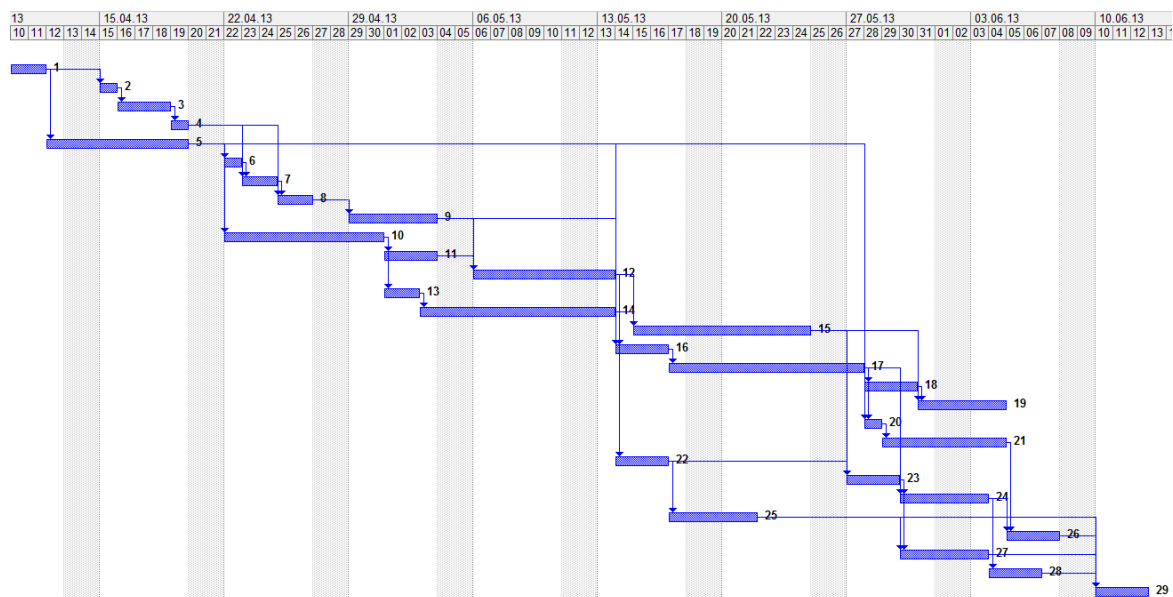


Fig. 3. Gantt chart for electronic content commerce system development

2.3 Expected effects of the introduction of electronic content commerce system

1. *Expected economic effect* from ECCS application is predicted by reducing expenses for project development and architecture of the system, for additional resources and personnel usage in the absence of clearly regulated plan. The factors of economic impact are following.
2. The presence of commercial content forming subsystem reduces expenses for informational resource moderators extra staff, as it carries out the authors' and moderators' work, namely: collecting data from various sources, formatting and categorization of content, keywords and duplication identifying, digest formation as well as content distribution.
3. Content management subsystem reduces expenses for personnel responsible for information resource updating.
4. Content support subsystem reduces expenses for personnel responsible for collecting and system functioning analyzing.
5. The presence of information resources processing subsystems allows reducing time on actual unique commercial content prompt getting, which leads to ECCS target audience

increase, and, respectively, increases ECCS implementation economic effect on several positions.

ECCS application leads to the growth of productivity of the project participants, improving the quality of information resources processing, reducing time spent on ECCS implementation and actual unique content prompt receipt. The reasons for effect growth are following.

1. Increase of labor efficiency occurs through the usage of the results of additional professional resources work, such as Google Analytics, moderators, administrators, programmers and analysts.
2. Analysis and increase of labor efficiency leads to improving the quality of formatting, management and support of the content as well as reducing time spent on system implementation and prompt content receipt.
3. Improving the quality of information resources processing is based on analysis of statistics and main characteristics of ECCS functioning, such as number of visits, average time spent on visit, failures indicator, achievement of search goal, content dynamics, number of page views, number of page views per visit, new visits, absolutely new visitors, traffic source etc.

4. Reducing time spent on ECCS implementation and actual unique commercial content prompt receipt improves the decision-making quality for e-business participants:

- a) the authors in order to create actual content according to the established, selected and distributed the list of digests related to the actual subject;
- b) the moderators in order to form rules as well as operational data collecting source lists;
- c) the moderators in order to form rules for categorization, duplication, formatting and content management, resource formation;
- d) the administrators in order to perform resource and system management;
- e) the analysts in order to perform the research system functioning statistics, formation of rules for identifying new stories and personalization of cooperation with user, content ranking.

Organizing effect lies in reducing the number of staff (moderator 1-3, administrators 1-2, authors 1-10, analysts 1-3, programmers 1-2), which is launched to preparation, formation and decision-making and changing its functions, which are performed by formation, management and content support subsystems (data preparation data for authors, tracking the results of staff performance, data collecting for analysts and moderators); changing the organizational structure (a clear division of functions between project participants, i. e. moderator won't be analyst, and vice versa); reducing the number of operations performed by personnel (a part of operations should be performed by ECCS via information resources processing).

Technological effect through the release or reducing such resources as staff, and more efficient usage of information resources processing subprograms in ECCS as well as clear allocation of responsibilities among participants, launched to certain project. The development of the new technologies such as formation, management and maintenance process of the content, and search engines

peculiarities (Vysotska, Chyrun, 2013), (Berko, Vysotska, Chyrun, 2014), (Ignify, 2014).

Ergonomic effect lies into influence of the results of ECCS operation and information resources processing through the formation, management and support of content on number of visits, average time spent on information resources (min.: s), failures indicator (%), achievement of searching purpose, content dynamics (%), total number of page views, number of page views per one visit, new visits (%), absolutely new visitors, traffic source in %, etc.

Psychological effect lies in friendly interactive interface for each participant of the project, which simplifies work for authors, moderators, administrators, analysts, and improves psychological indicators for visitors and regular ECCS users through individualization of work.

Advertising effect lies in unique content, content template and information resource usage, which improve searching results from search engines, and serve as self-promotion of ECCS, information resource and commercial content. Cooperation with Google advertisement improves ECCS information resource advertisement rates as well as e-business.

Social effect lies in increasing the number of information resource visitors (permanent and unique), increasing the limits of target audience, resource availability and commercial content support, coverage of a wider social audience, ability to change the boundaries of the target audience through social regulation topics and information resource filling. The support of topically similar and relevant commercial content, its uniqueness and efficiency of creation, formation, representation through information resource and support allows adjusting the limits of constant target social audience for ECCS and forecasting/adjusting these limits changes.

2.4 Input data in ECCS

List of input data types, their characteristics, description, classification allow them be conditionally divided into seven groups of incoming content, depending on the project participants' class: visitors, users, authors, administrators, moderators, analysts and other

information resources. The input data elements structure allows you to create the requirements to ECCS and its components as well as clearly limit their functionalities, describe the source, their incoming frequency and additional conditions/limitations which are imposed by input data source. ECCS input data are following:

1. a content from different sources specified by moderator predefined list (subscription, free and open content from information sources predefined list, author content, content as the result of the search engines operations etc.) in the form of data without predefined structure in HTML/XML-format in order to create commercial content;
2. information requests from users/visitors ECCS information resource as a text message in the appropriate fields (keywords/phrases in order to find commercial content, messages and/or requests to participants of the project);
3. actual data (set of source address, words/phrases, and/or user logins with disabling printing/access option) and/or rules (set of operations like *IF (fact i) THEN ban ELSE check OR permit / print*) from ECCS information resource moderators;
4. actual data (ECCS and Google Analytics parallel cooperation statistics as XML-tables and/or fixed customized/personalized user actions such as viewing, downloading, storing and/or content searching) and/or statistical analysis rules of user action (formation of associative lists of popular, topical, outdated, recently revised and/or similar content/subjects or author works/authors, and forecasting of thematic content demand) from analysts of ECCS information resource operation;
5. information resources electronic URL-address from moderators for information filters databases such as ECCS data source;
6. language dictionaries replenishment by moderators as a list of words, phrases with the defined characteristics (part of the language and, if necessary, gender, number, cases etc.) as well as additional set of morphological features to each of them;

7. ECCS information resource operation statistical data, collected at specified intervals from Google Analytics as XML-tables;
8. comments and user feedbacks as a text data array completed in specially designated places of information resources;
9. members voting results regarding content and quality of the commercial content according to the defined numerical evaluation scale with the possibility to support linguistically inaccurate voting, e. g. "good" etc.;
10. individual statistics/personalized user actions (viewing of content, viewing time, downloading/uploading of content, searching);
11. commercial database content components, content collected from various sources, duplicate content, registered users, project participants, linguistic dictionaries in order to determine keywords and headings, keywords and subjects, keywords in order to determine subjects and their replenishment;
12. external advertisement in the form of banners from Google and partner sites;
13. thematic stickers of information and/or entertainment content (weather, exchange rates, anecdotes, announcements, horoscopes etc.);
14. ECCS settings from administrators in the form of change/creation and liquidations of additional options and system configurations and/or information resource through the administrative part of the system.

2.5 Electronic content commerce system output data description

ECCS output data are following:

1. the final information product of ECCS operation in the form of commercial content (article, announcement, digest, e-book, audio, video etc.);
2. answers on user's information requests (list and set of a similar subject content according to the content searching results using keywords and concepts which contained in the information request);
3. commercial content digests (short thematic announcements of commercial content

according to their set of keywords and concepts);

4. information resource visits' statistics according to the number of clicks on the link, time spent on visit, number of page downloads and additional investments;
5. user actions' statistics and/or information resource visitors in order to form individual portrait of user/audience according to the number of clicks on the link, time spent on visit, number of page downloads and additional investments, switching between pages etc.;
6. forming / filling in of information resource page individually for user according to its statistical action history (selection of related content, current recommendations for thematic content etc.);
7. new rubrics/topics of commercial content (creation and formation of a new category according to the input data sources analysis, authors operations, comments and information requests from users);
8. ranking the results of commercial content in the form of evaluation within a scale [0;5], [0;10], [0;12] or [0;100];
9. relationship tables of similar, recently revised, popular, outdated, authorial and/or topical commercial content according to the keyword list of this content, user pages viewing analysis, sequence and time spent on thematic content viewing;
10. evaluation of comments as the result of the commercial content user's comments in the form of permission/prohibition of printing on information resources, and, if needed, with the prohibitive recommendations for certain user to post the following comments.

The list of output data, messages, their description, characterization, classification, method of formation and transfer allows to create precise functional requirements for the development and implementation of ECCS.

2.6 Requirements for software tools of information resources processing in electronic content commerce system

ECCS interface basic requirements: scalability/performance while working with a large number of users, sessions, transactions and database connections; productive browser connection and back-end data storage; rapid development and deployment of Web OLTP-applications support; support of synchronous/asynchronous transaction management via servers. ECCS transactions servers characterize the following features: built-in transaction management services; the mechanism of starting and management of servlets; calls of distributed objects in order to ensure communication in multilevel applications; facilities for rapid software development for intermediate level, including component development. ECCS provides support to six interfaces: with limited access for visitors and users (Fig. 4); without restrictions for the administrator and moderator; with free access to author and analyst (Berko, Vysotska, & Pasichnyk, 2009), (Bolshakova, Lande, Noskov, Klyshynskyy, Peskova, & Yahunova, 2011), (Guide, 2012), (Clifton, 2009), (Fedorchuk, 2005), (Lande, 2006), (Lande, Furashev, Braychevskyy, & Hryhorev, 2006), (Pasichnyk, Scherbyna, Vysotska, & Shestakevych, 2012).

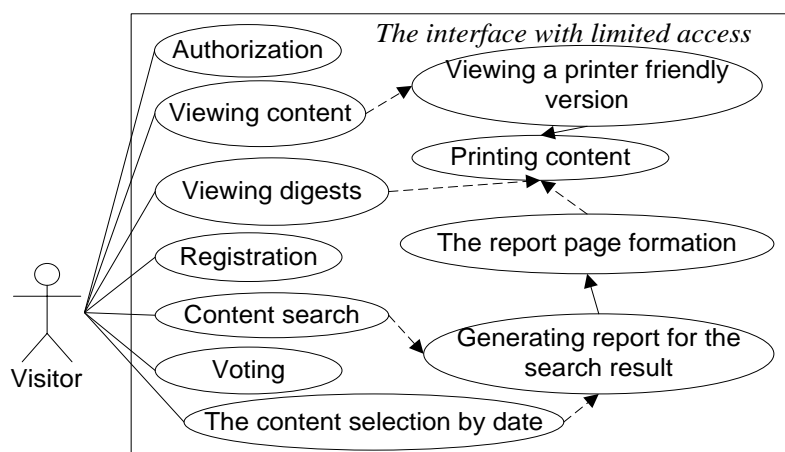


Fig. 4. Use case diagram for the interface with limited access to information resource visitor in electronic content commerce systems

The access for users is implemented using login and password (Fig. 5). Such services as a choice of content for a certain period of time starting from the beginning of content filling through a calendar

are additionally implemented there. The convenient rubricator allows you to select content by certain category. Searching is carried out by using keywords in the database.

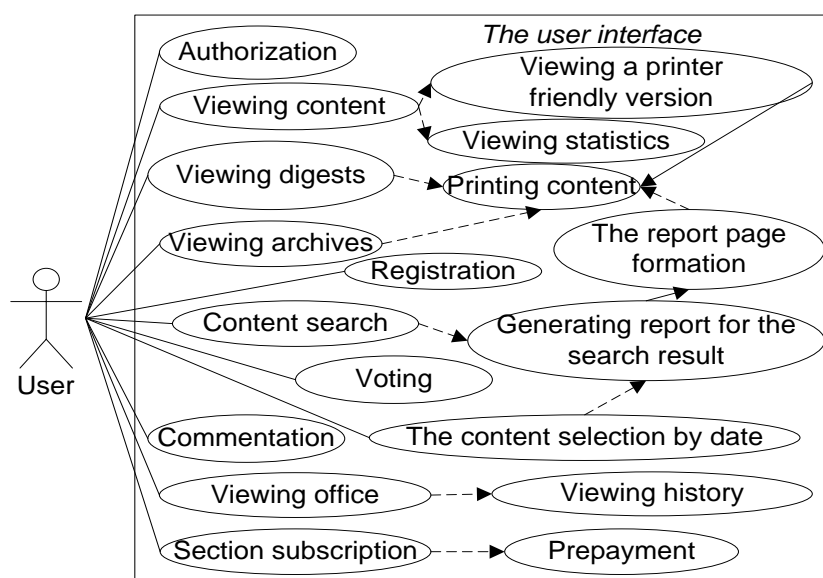


Fig. 5. Use case diagram for the interface with limited access to information resource user in electronic content commerce systems

System administration is carried out through administrator interface (Fig. 6) access to which is limited and implemented using login and password. The adjustments to the structure of the system/resources are made here as well as user access rights are added, edited or deleted, and content distribution rule change (Berko, Vysotska, & Pasichnyk, 2009), (Bolshakova, Lande,

Noskov, Klyshynskyy, Peskova, & Yahunova, 2011), (Guide, 2012), (Clifton, 2009), (Fedorchuk, 2005), (Lande, 2006), (Lande, Furashev, Braychevskyy, & Hryhorev, 2006), (Pasichnyk, Scherbyna, Vysotska, & Shestakevych, 2012), (Vysotska, Chyrun, 2013), (Berko, Vysotska, Chyrun, 2014), (Ignify, 2014).

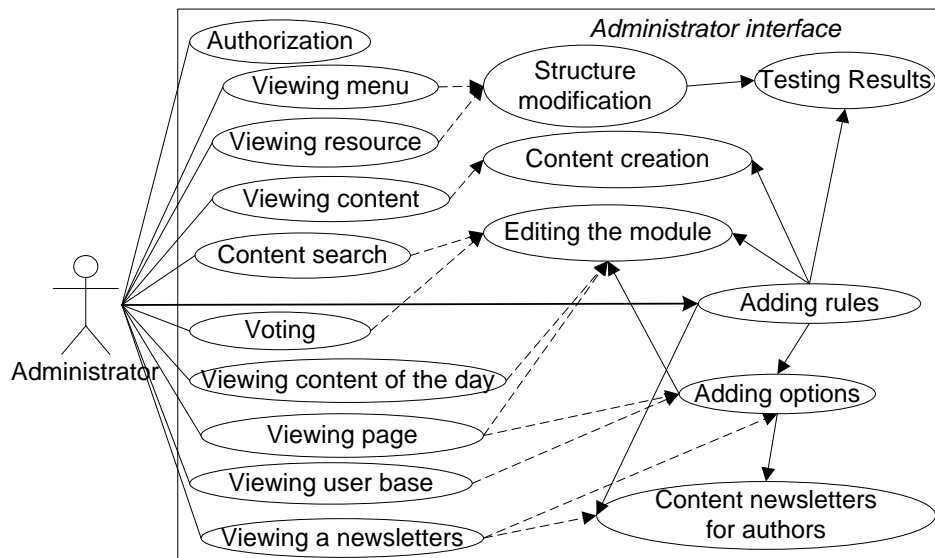


Fig. 6. Use case diagram for the interface with free access to information resource administrator in electronic content commerce systems

Creating/editing content is carried out through author interface (Fig. 7) access to which is limited and implemented using login and password

(Vysotska, Chyrun, 2013), (Berko, Vysotska, Chyrun, 2014), (Ignify, 2014).

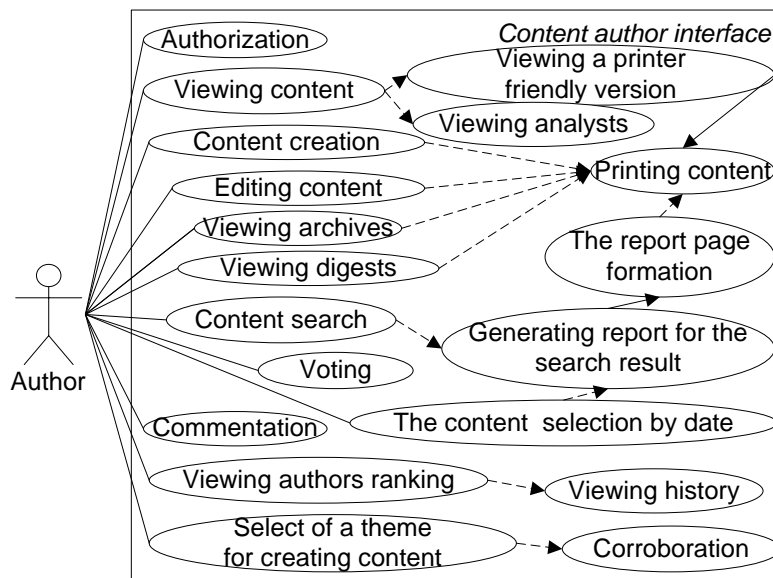


Fig. 7. Use case diagram for the interface of content authors to information resource in electronic content commerce systems

The development of functional requirements for formation subsystems, management and maintenance of content in ECCS promotes the development of such systems typical architecture. On the one hand, ECCSs facilitate work of moderators, authors, analysts and administrators of these systems, and increase

system functionality to their users on the other. ECCSs select a range of topical issues in the form of content plurality from other sources for moderators and authors according to their rating through commercial content formation subsystem. The author creates his own commercial content according to ECCS analysis

chosen from various sources of actual content. If needed, the moderator creates new rules for filtering content from various sources and updates the addresses of other sources in commercial content formation subsystem (Fig. 8). Analyst analyzes the activity of the target audience and ECCS operation for the development of new rules and statistical analysis of the dynamics of commercial content lifecycle stages through commercial content support subsystem. These rules should increase the range of the target audience, number of visits, number of unique visitors, number of repeated visits, number of visits from search engines, number of direct visits, number of regional visits, number of visits etc. for thematic information resources in ECCS. The purpose of work is also to determine the functional requirements for information resources processing subsystems in ECCS as formation, management and maintenance of commercial content. Commercial

content formation subsystem facilitates the work of the authors and moderators of ECCS. Content management subsystem facilitates the work of the authors and moderators of ECCS as well as supports different functionalities for users of these systems. Commercial content support subsystem facilitates the work of the analysts of ECCS. Information resource moderation is carried out through moderator's interface (Fig. 8) access to which is limited and implemented using login and password. Here are introduced the rules and parameters for monitoring content from different sources; commercial content is being added, edited or deleted; the content of the day is set (for publishing ECCSs); the content of static pages as well as rules of sending letters with the content is changed. There was implemented a convenient service for adding new clients with a possibility to group them into certain categories and set the time limits of access that is blocked automatically after a certain period.

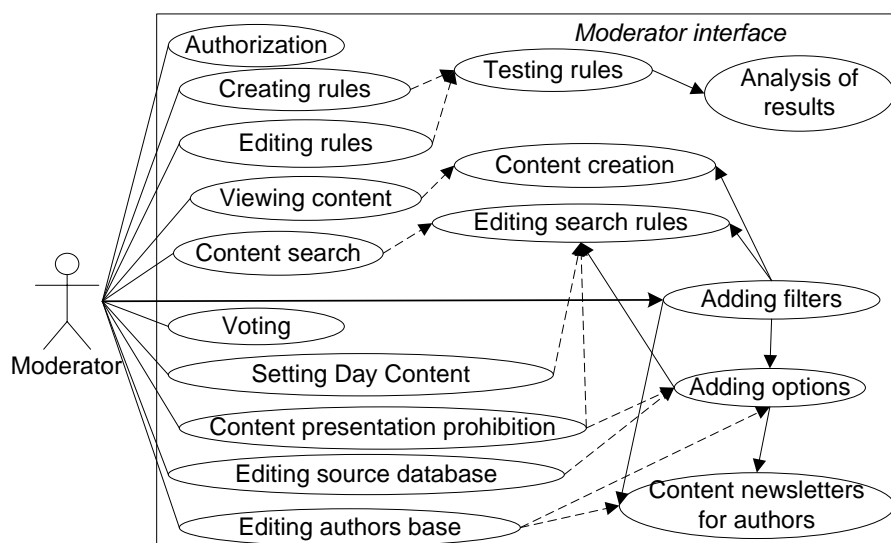


Fig. 8. Use case diagram for the interface of content moderators to information resource in electronic content commerce systems

Statistic formation and its analysis is carried out through author interface (Fig. 9) access to which is limited and implemented using login and password. Here are made the amendments in the rules of information resource operating statistics; this statistics analysis rules are being added, edited or deleted; the rules of commercial content ranking as well as commercial content rubrics and commercial content authors are established.

There was implemented a convenient service for automated adding of information resource operating statistics and this resource users activity as well as the rules of this statistics analysis (Berko, Vysotska, & Pasichnyk, 2009), (Bolshakova, Lande, Noskov, Klyshynskyy, Peskova, & Yahunova, 2011), (Guide, 2012), (Clifton, 2009), (Fedorchuk, 2005), (Lande, 2006), (Lande, Furashev, Braychevskyy, &

Hryhorev, 2006), (Pasichnyk, Scherbyna, Vysotska, & Shestakevych, 2012).

Software tools created for content version control ensure that the online portals content will not be lost or accidentally overwritten. Moderators and

administrators have the opportunity to easily find the required version of content and information resource. Building of business processes based on roles and user groups means the independence from delays while execution by individual persons.

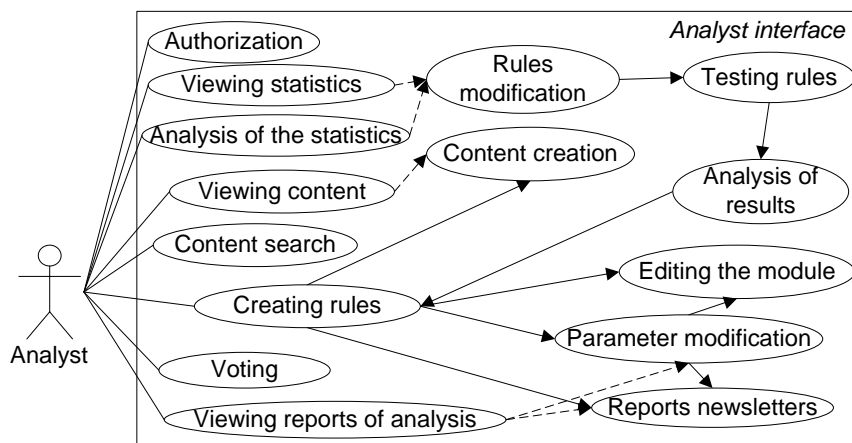


Fig. 9. Use case diagram for the interface of content analysts to information resource in electronic content commerce systems

Table 1. Structural elements designed for constructing interfaces and ECCS information resources processing software tools

Elements	Purpose
HTTP, FTP, IIOP	Communication protocols between client and server.
CGI, Perl, PHP and specialized API	Integration of HTTP-servers with information sources.
HTML, WML, XML, XHTML, JavaScript	Implementation of hypertext capabilities.
Flash, formats for audio/video, VRML	Implementation of multimedia capabilities.
POP, UDP, SMTP	Implementation of communication and interactive communication.
PHP, Java	Calculation support.
CMS, CMIS	Systems and service of content management.
CMIP	Network management protocol for OSI networks.
GPRS, EDGE,UMTS, WAP	Organization of mobile access and calculations.
CORBA, COM,DCOM, EML, ORB	Implementation and development of distributed objects.
File systems, OS, database CMS	Saving and processing of data.

2.7 Requirements for hardware, software and network environment in which ECCS is implemented.

The list of structural elements in the form of software and information technology designed for constructing ECCS information resources

processing software tools is presented on the table No. 1

ECCS technology is automation (full or partial) of the business process by which content, documents, information or tasks are transferred for the appropriate action from one participant to another according to the set of procedural rules.

ECCS describes, creates and manages workflow (business process) using the software that interprets the process description, cooperates with the participants of the workflow and, if needed, elicits corresponding software applications and instrumental tools. ECCS automates a business process (not a function), and implements the rules of interaction between participants, as these aspects are the main centers of losses because of their ambiguity. The result of ECCS formation is such a system like online newspaper, online magazine, online editions, online publishing, distance learning, online store created for selling content in the form of e-books, photo, video, audio etc.

Standardization and implementation of functional requirements for ECCS formation provides the creation of a generalized approach for such systems developers in order to reduce the time for formation and implementation of such systems with avoiding of appropriate project development phase. Requirements for ECCS operation results, operation regulation, ways of displaying, transfer and store depends on the implementation of major information resources processing subsystems such as formation, management and support of commercial content. Requirements for compatibility and ways of interacting and communication with other systems lie in support of text arrays processing in HTML and/or XML-format.

ECCS ergonomic requirements lie in convenience of maintenance and system support, rational configuration of program and interface elements, convenience of system management tools, aesthetic design. ECCSs support security/protection of data and other system components from unauthorized access, loss, destruction, damage. Support of organizational and procedural requirements for personnel, its composition and qualifications, system operation charts, rights and powers to operate the system etc. allows to implement/introduce ECCS, maintain the system functioning process on high level and analyze the results of its approbation and its major subsystems of information resources processing.

2.8 Requirements for commercial content formation subsystem

The commercial content formation subsystem is based on the multilevel model of processes organization. Such an organization provides the separation of subsystem structure on such individual modules: gathering/creation of content from various sources, formatting, identifying keywords and concepts, headings, identifying duplication, formation of digests and selective dissemination of content between ECCS users. Content formation subsystem is implemented in accordance with the algorithm 1-2.

Algorithm 1. Formation of content analysis set

Stage 1. *Gathering content from various data sources and saving it in database.*

Stage 2. *Filtering content by a set of rules defined by system moderator.*

Stage 3. *Formatting content in XML-format and saving it in the database.*

Stage 4. *Determination of content duplication and duplicates filtering.*

Stage 5. *Determination of keywords and concepts of the content and saving them in the database.*

Stage 6. *Formation of content digest and saving it in the database.*

Stage 7. *Formation of content and making an entry in the annotated database.*

Stage 8. *Commercial content categorization.*

Step 1. Identification of concepts from content using data from definitions database.

Step 2. In case experts weights are presented in the definition of the concept, then it should be calculated the weight of concept emergence in the text, taking into account the frequency of the phrase appearing in content.

Step 3. Adoption of decision on content belonging to a particular category based on the rules of categorization and set of concepts found in the text of the calculated weights.

Stage 9. *Selective content distribution among moderators and authors of commercial content according to the direction of their work and their estimated rating of popularity and quality of work.*

The principle of identifying keywords within the meaning (terms) based on Zipf's law and it comes down to choice of words with average occurrence frequency (the most used words are ignored due to "stop dictionaries", and the text rare words aren't taken into account). Then the terms for new keyword formation are synthesized, using structural parts of speech base (Fig. 10)

(Vysotska, Chyrun, 2013), (Berko, Vysotska, Chyrun, 2014), (Ignify, 2014), (Berko, Vysotska, & Pasichnyk, 2009), (Bolshakova, Lande, Noskov, Klyshynskyy, Peskova, & Yahunova, 2011), (Guide, 2012), (Clifton, 2009), (Fedorchuk, 2005), (Lande, 2006), (Lande, Furashev, Braychevskyy, & Hryhorev, 2006), (Pasichnyk, Scherbyna, Vysotska, & Shestakevych, 2012).

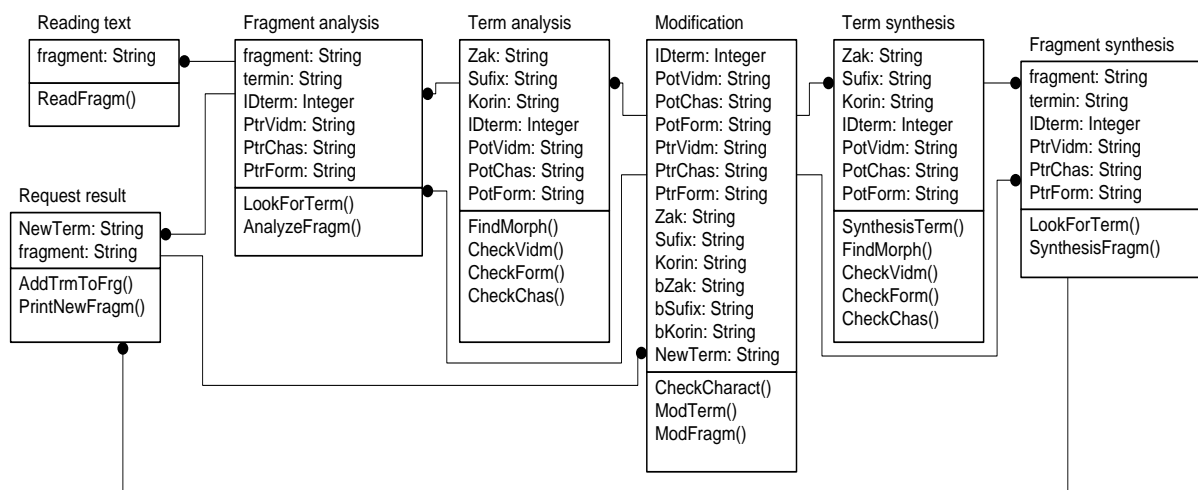


Fig. 10. Class diagram for content subject keywords identifying process in ECCS

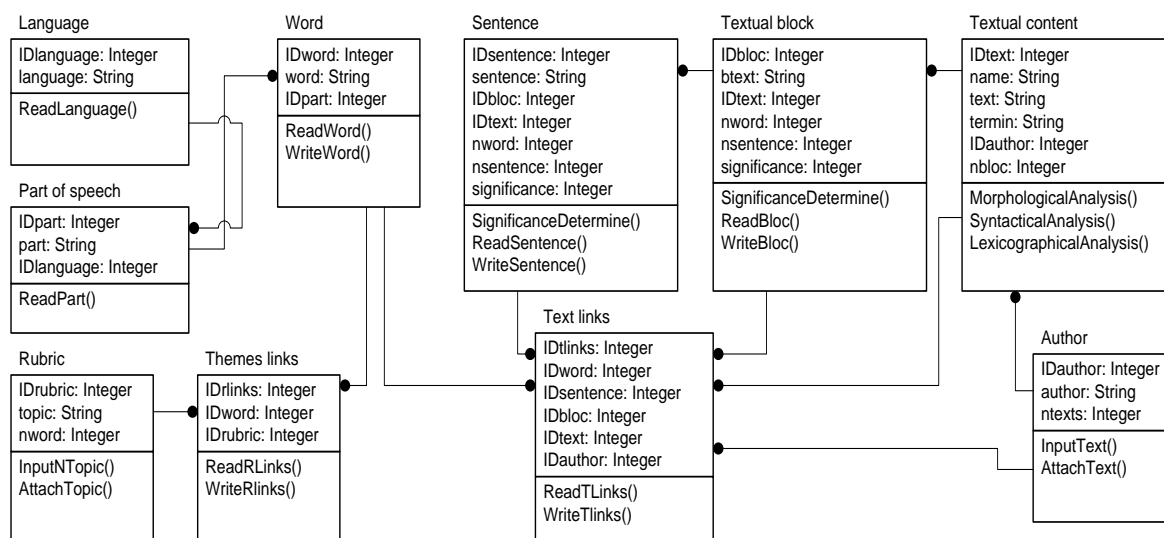


Fig. 11. Class diagram for content categorization process in ECCS

The process of categorization using automatic indexing of commercial content components is divided into consecutive blocks: morphological analysis, syntactic analysis, semantic and syntactic analysis of linguistic structures and text

content substantial writing variation (Fig. 11).

Based on analysis of the given set of content, authors create content, which then passes the following stages of processing (Alg. 2.)

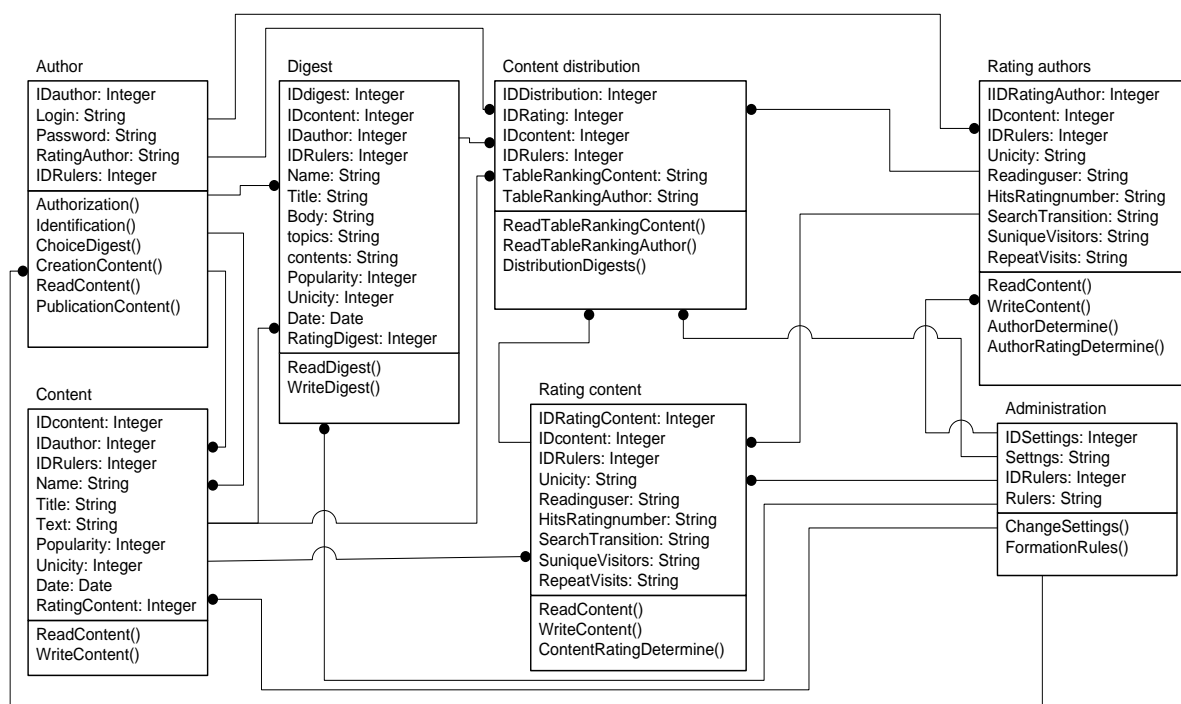


Fig. 12. Class diagram for commercial content distribution process in ECCS

Algorithm 2. Commercial content formation for information resource in ECCS

Stage 1. Author analysis content plurality obtained from various sources.

Stage 2. Author content formation as a result of the analysis of content plurality obtained from various sources and filtered.

Stage 3. Author content formatting in XML-format and saving it in the database.

Stage 4. Checking for commercial content duplication and doubles prohibition. In case there are duplicates, the author's bugs should be fixed, and move to the stage No. 10, otherwise — move to the stage No. 5.

Stage 5. Verification and validation of commercial content. In case there is unique content $> w$, move to the stage No. 6, otherwise — the author's bugs should be fixed, and move to the stage No. 10.

Stage 6. Determination of keywords and concepts of the content and saving them in the database.

Stage 7. Commercial content categorization.

Stage 8. Formation of content digest and saving it in the database.

Stage 9. Formation of content and making an entry in the annotated database.

Stage 10. Recalculation of content author rating.

Content includes subject and digest. Content distribution subsystem selectively sends digests among the authors according to their work quality rating (Fig. 12).

From the very beginning the subsystem receives ready digests from sources via RSS. Then digests are distributed among authors according to their rating: The author with the highest rating is the first person who receives digests for revision. In case all operations are ready, the subsystem goes into standby mode before the appearance of new content. Authors' rating indicates the performance/effectiveness of work of each of them individually. It is affected by the next criteria: the percentage of unique content (quality of the author work), the number of content views (weight of search and direct conversions), user evaluation (users' activity) and time spent on visit (a measure of users' interest in the content).

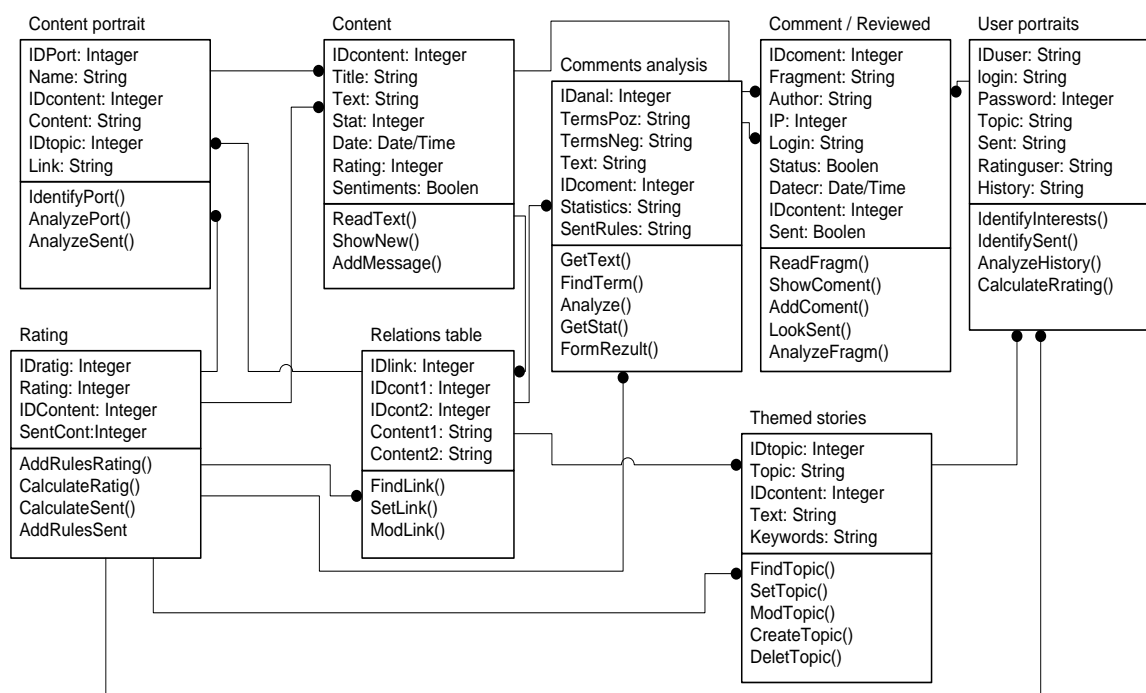


Fig. 13. Class diagram for commercial content support process in ECCS

Class diagram, which is presented on Fig. 13, shows the units of object-oriented subsystem of commercial content support. Static representation of the content support model that describes the attributes and behavior of subsystems is presented on a class diagram. Principles of content analysis are the basis for the implementation of the subsystem. This allows automating of the various stages of formation of information product of such a type without loss of content and reducing quality. The results of its application while developing a number of commercial content projects confirm the effectiveness of subsystem functioning. The developed automation means for content formation allow accelerating of content formation process and increasing the usage rate of commercial information resources which were created by their help (Vysotska, Chyrun, 2013), (Berko, Vysotska, Chyrun, 2014), (Ignify, 2014), (Berko, Vysotska, & Pasichnyk, 2009), (Bolshakova, Lande, Noskov, Klyshynskyy, Peskova, & Yahunova, 2011), (Guide, 2012), (Clifton, 2009), (Fedorchuk, 2005), (Lande, 2006), (Lande, Furashev, Braychevskyy, & Hryhorev, 2006), (Pasichnyk, Scherbyna, Vysotska, & Shestakevych, 2012).

2.9 Requirements for commercial content management subsystem

Commercial content management subsystem supports interactive communication between user and electronic content commerce system through information resource. The subsystem must form information resource to the needs user and respond to his/her requests. Information resource consists of a clearly defined set of components (nodes) that are semi ordered (some of the components are clearly defined order, and their location in the graph is not necessarily defined). The number of information resource components and the corresponding volume of components set is precisely defined/evaluated. Construction of graph of navigation (navigation graph) on information resource is going on the basis of given ratio of adherence to the set of relations of information resource components. Navigation is carried out without interruption and transition to a new node of the navigation graph is logical. The units are submitted by the random types of relationships that do not have significant limitations. The minimum number of project nodes determines the graph that provides the most meaningful information about information

resource. Each arc in the navigation graph displays the elementary relationship between components of information resource and must have an orientation.

The content templates are used for constructing the pages with the ability to submit data in different formats, split the pages into parts that are repeated, cache them. Information in the database is modified by editing module. The pages are created anew by the submission module with every request (Fig. 14).

Based on URL in the query analysis module determining the portion of the requested content/page is defined.

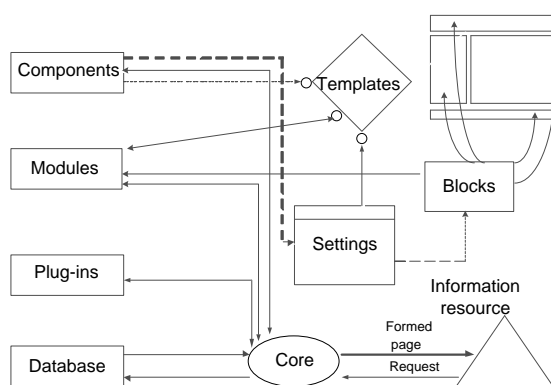


Fig. 14. Requirements for the formation of information resource as a result of the response to user request in the content management subsystem

Table 2. Requirements to relationships for the procedures of content management process

User	System core	System database
1) URL-request with GET-parameter	2) obtaining page code with GET-parameter	4) request for obtaining record by code
	3) initialization of OCP (object of current page)	5) request for initialization fields by record
	6) beginning of HTML-content structure formation	7) request for title formation
	8) output in <title> the title from OCP	
	9) starting of content publishing	10) request for records obtaining
	12) menu items output	11) request for query cyclic processing
	13) request for OCP content publishing method	
	15) content formation process	14) request for content formation
	16) completion of HTML-content structure formation	
	17) content support process	18) content image record
20) page view	19) page output	

The best basic structure for presenting content is hierarchical (tree of pages). That is why the preservation of content objects in the database should be organized on the principle of a tree — to add a field that indicates the parent element ID. In case of improper working with data, it is predicted the output of error message as well as the sequence of further actions. The service content and ECCS management process is implemented on the concept of CMS development.

The presentation subsystem generates a page with the content during the request using information from the database (table 2).

In order to receive commercial content with certain parameters the user must pass a number of steps. Commercial content management process by user or moderator is implemented

through alg. 3, the scheme of which is presented on Fig. 8.

Algorithm 3. Content management in order to the firm information resource in ECCS.

Stage 1. Authorization in electronic content commercial system.

Stage 2. Selecting a template content from the dialog box.

Stage 3. Selecting and setting various parameters.

Stage 4. Selecting the required functional under the protocol template.

Stage 5. Content generation out of template by the stage No. 3 defined criteria.

The basis of content management subsystem is a core — a subsystem that connects all parts into a single application and is responsible for loading

and configuring modules, connecting general dependencies and providing information resources integration points. The most important task is to ensure that the information needs of system problem-oriented elements, maintaining access to data of different categories of users, compliance integrity and consistency of data, minimization and control under data excess, ability to develop and change the internal organization of information resource, compliance with the requirements of quality and data efficiency. ECCS provides modification of information resources through submission methods, formats, and content internal organization; content storing environment, physical storage units, technical means; user requirements, the emergence of new requirements and types of users; procedure for

distribution of content and methods of user access.

2.10 Requirements for commercial content support subsystem

In order to save the electronic content commerce system, the results of these statistics and information resource configuration the separate configuration files are used (Fig. 15) (Vysotska, Chyrun, 2013), (Berko, Vysotska, Chyrun, 2014), (Ignify, 2014), (Berko, Vysotska, & Pasichnyk, 2009), (Bolshakova, Lande, Noskov, Klyshynskyy, Peskova, & Yahunova, 2011), (Guide, 2012), (Clifton, 2009), (Fedorchuk, 2005), (Lande, 2006), (Lande, Furashev, Braychevskyy, & Hryhorev, 2006), (Pasichnyk, Scherbyna, Vysotska, & Shestakevych, 2012).

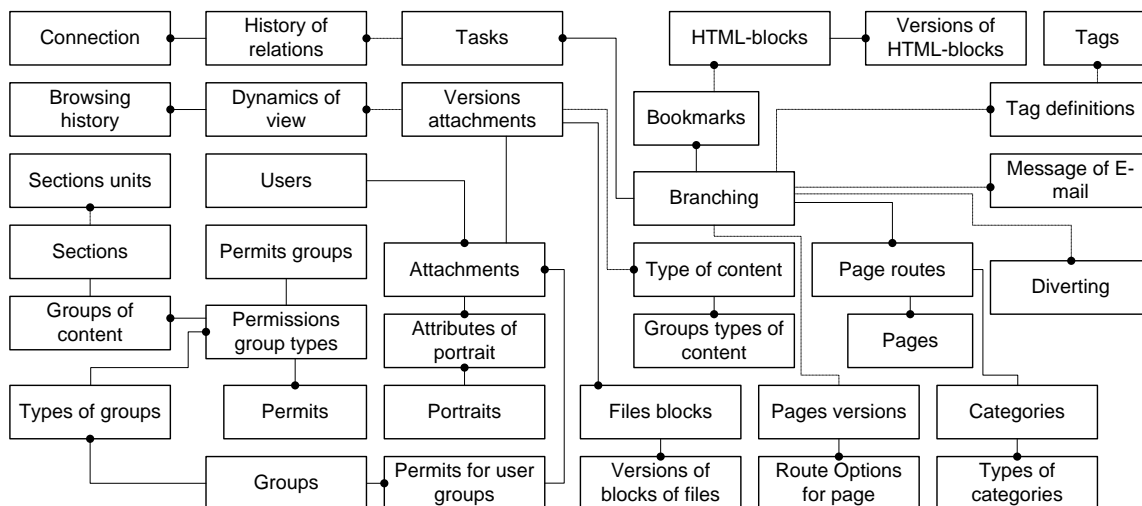


Fig. 15. The structure of electronic content commerce system information resource

In order to support commercial content it should be analyzed the statistics and dynamics of information resource operation for a certain period, for example, information about visits, search traffics, requests activity, number of page views, number and time of reading content and content topics, popularity of authors and categories of content, activity of visits by region and languages, choosing settings categories, downloaded files, settings regarding content types, structure of content group sections, emails, comments and feedbacks, number and types of content groups, groups of content and users, Web-templates, Web-templates content, Web-

page visiting, information resource structure, users data and their settings etc.

ECCS-application is built into *information resource* in order to form the commercial content rating and a for better understanding of the end user needs by analyzing the content type questions/answers, ratings, feedbacks, articles and more. With the help of component "FIFO-type queue" user requests get into content filtering application on pre-defined rules individually for each client (Table 3). Client's *individual cabinet* provides the possibility to view content and statistics analysis. *Indexing data* component is intended for commercial content quick search.

Content support subsystem control analysis, sampling, construction and statistical data moderation as well as algorithms of moderation/commercial content generalization under the certain rules (Table 4). Class diagram, which is presented on pic. 13, shows the units of

object-oriented subsystem of commercial content support. Static representation of the content support model that describes the attributes and behavior of subsystems is presented on a class diagram (Vysotska, Chyrun, 2013), (Berko, Vysotska, Chyrun, 2014).

Table 3. *Content support rules in electronic content commerce system*

<i>Censorship analysis</i>	<i>Prohibited lexicon database</i>
Characters counting and text cutting off (a rating is left only) in case of insufficiency to be called a response.	The specific rule concerning number of characters.
Locking of content which contains competitive products names.	Competitive products names are determined by moderator.
Locking of certain content senders.	IP–addresses database.
Formation of own rules.	It is determined on client’s request.

Table 4. *Commercial content moderation rules in ECCS with self-education*

<i>Filter</i>	<i>Rule</i>	<i>Operating mode</i>
Prohibited lexicon	Verification according to the dictionary and prohibition in case of TRUE	Semiautomatic, in case of FALSE, it is checked by moderator, the dictionary is periodically updated by moderators.
According to the number of characters	Calculation, comparison with the limit and prohibition in case of FALSE	Automatic, the limit is defined by administrator or owner of information resource.
According to the presence of URL-links	Determining, checking according to the list and prohibition in case of TRUE	Semiautomatic, in case of FALSE, it is finally checked by moderator, the list is periodically updated by moderators.
According to the blacklist	Verification according to the list and prohibition in case of TRUE	Semiautomatic, in case of FALSE, it is checked by moderator, the list is periodically updated in case of limit excess.
According to the rating	Calculation, comparison with the limit and prohibition in case of FALSE	Automatic, the period and limit are defined by administrator or owner of information resource.
According to the link related to competitor	Verification according to the list and prohibition in case of TRUE	Semiautomatic, in case of FALSE, it is checked by moderator, the list is periodically updated by moderators.
According to the IP–addresses	Verification according to the list and prohibition in case of TRUE	Automatic, the list is periodically updated in case of limit excess, the limit is defined by administrator.
According to the user’s ID	Verification according to the list and prohibition in case of TRUE	Automatic, the list is periodically updated in case of limit excess, the limit is defined by administrator.

CONCLUSIONS

Content analysis enables formation of conclusions regarding the possibility of influence on target audience growth, tendencies of information resource annual volume of visits increase over time. It is possible to investigate the dynamics of changes in global, national, regional, industrial, thematic content flow or dynamics of growth of homogeneous flow part on any basis.

The basis for the obtaining data on dynamics of change and target audience growth is secondary sources, such as, Google Analytics. In order to improve the accuracy of content analysis dynamic results there should be implemented the following steps: users’ information portraits and content analysis, analysis of content thematic subjects, formation of content relationship tables, comments tonality, rating/content history and information resource statistics analysis.

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CONCEPTUAL FOUNDATIONS OF COMPANY CASH FLOW PLANNING

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Abstract

The article deals with the conceptual foundations and principles of cash flow planning that will enable coherence between cash flow and tactical and strategic objectives of the company. An important objective of this is monitoring the formation and use of payment instruments as well as providing financial resources for the operating, financial performance and an investment either. The author analyzes the methods of cash flow planning (economic - statistical, economic - mathematical, technical - economic), its principles (complying the proportions of funds distribution and their minimum required volume, flexibility, evaluating the effectiveness of funds usage, adequate spacing and planning methods) as well as external and internal factors that influence the effectiveness of planning. Much attention is paid to different kinds of cash flow planning: strategic, current, operational and the making of the payment calendar and tasks which it solves. The structure of the cash flow budget has been surveyed. The causes of deficiency and excess cash and ways to balance them have been analyzed: attracting of additional loan capital, reducing of costs, improving the work with current assets, reducing of investment program, and early repayment of long-term loans. Two basic methods (alignment and synchronization), used in the process of the cash flow optimization, have been mentioned. Much attention is paid to the stages of the cash flow planning implementation process. They are: planning without automation, automated planning and formalized planning. So the analyzed aspects will allow achieving a systematic approach in cash flow planning, in coordination of their movements and tasks of the enterprises.

Keywords: *cash flow, operating, investing and financing activities, accumulation, income, finance resources, strategic, current, operational planning, planning principles, stages of planning.*

1 INTRODUCTION

In the modern business environment the cash flow planning of the company is an essential part of financial planning. In countries with developed market economies the role of business financial planning is constantly growing. However, current

methods of planning and financial management can not be used effectively yet. In many domestic companies cash flow planning is limited only to the calculation of cash sources and outflows, it means to current planning. Cash flow planning is often reviewed in developing budget funds in the scheduled period, taking into consideration only the basic components of the flow.

In recent years, cash flow planning is becoming increasingly important in the works of foreign and Ukrainian scientists.

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Such investigators as L. Bernstein (1996) and B. Kollas (1997) consider planning cash flows only in the short term, Van Horn (1996) defines cash flows forecasting as an opportunity to determine the time and the amount of the income and expenditure of funds, A. Poukok, and A. Taylor (1996) consider cash flows planning a part of the development of a plan for working capital.

R. Ackoff (2002) uses the term "plans' integration" in the narrow sense, D. Han (1997) uses the term "integrated system of reduced planning" that comes to complex of periodic and non-periodic plans.

The Ukrainian scholars O. Orlov (2002) and M. Gorohov (1998) admit only short-term planning. According to A. Poddieriogina cash flow planning makes it possible to identify the sources of capital and identify its use in a subsequent period. (Podderogin, Buriak, & Kalach, 2001)

The Ukrainian economist I. Blank believes that cash flow planning is a development process of a system of plans to the formation of different types of flows in the financial and operating activities in the next period. (Blank I., 2002)

P. Krush, S. Polischuk, and A. Filimonov (2012), and V. Stepura (2012) examine the relationship of strategic planning and budget planning, their coordination in an integrated system of budget planning.

Determining the significant contribution of scientists in this field it should be noted that some issues of financial planning of enterprise activity are still in need for further investigation. In particular, it concerns such issues as defining the role and functions of cash flow planning in ensuring the financial stability of enterprises, methodological support of the financial planning and its integration, the development of the conceptual foundations of planning.

The purpose of this study is to reveal the theoretical and methodological positions as for the formation of financial cash flows planning system and the analysis of a wide range of methods and techniques of planning to ensure enterprise financial stability.

Focus on sustainable development shows the necessity in changing a paradigm in financial planning in Ukraine on the basis of the synthesis

of national practice and achievements of international experience.

2 BASIC METHODS AND PRINCIPLES OF THE CASH FLOW PLANNING

Industry cash flow planning is one of the most important areas of financial activity, which aims to efficiently synchronize existing cash flows for the financial equilibrium of the company. Indeed, in modern terms, there is a lack of funds to implement the operational and financial activity, the risk of losing solvency and asynchronism of revenues and expenses.

Based on the material described above, the main objectives of cash flow planning are: efficient use of funds; control over the formation and use of payment instruments; providing investment, operating and financing activities with necessary financial resources; equalizing payments in order to avoid excessive fluctuations in cash flow.

Cash flow planning helps company management ensure proper business financing or withdrawal of money from circulation. Such financing can be achieved through negotiation with contractors to make faster payment, with banks to organize short-term loans, with suppliers to delay payment. Removing money from circulation can be done in the following ways: deposits in banks in order to obtain interest, granting deferrals to contractors to improve partnerships, funds withdrawal from the company in order to invest in securities, increase of production.

Cash flows also can be simply accumulated to create a "cushion", which is especially important at the stage of financial planning in the company where plans differ significantly from the actual situation.

When planning cash flow, in addition to deciding about budget as a whole, it is important to calculate another aspect. The flow from operating activities should be positive. In this part of the budget the company earns its own profit. In a monthly production capacity the company has to accumulate its profit. The flow from investing activities should be negative, i.e. the company should invest its money in the purchase of new equipment. The flow from financing activities balances the other two activities.

If the enterprise flow from operating activities is negative and the flow from investing activities is positive, it is a warning sign, since the company is funding the current activities by selling assets. It must be clear, that such a company cannot expect to succeed in the future.

Thus, cash flow planning allows the company to move into the foreground. It can be added that the plan of income and expenses will not show such overview as budget of cash flow, because investment in fixed assets are not expenses, so that they do not reduce taxable income. And if the budget is made only of income and expenses, the acquisitions of fixed assets will not be seen at all (if the process has been built correctly in terms of accounting).

In cash flow planning a system of methods is used that allows achieving the required results. These include methods of economic - statistical, economic - mathematical, technical - economic calculations, comparison, balance, etc.

Besides these methods there is also a system of cash flow planning principles. The main principles are the following: the principle of the proportions of cash flow distribution between the main components of the production process; the principle of flexibility of cash flow planning, adequate spacing and planning methods; the principle of evaluating the effectiveness of funds usage and justification of the minimum required amount of money that should be in company circulation to provide its liquidity.

The choice of techniques and methods for cash flow planning depends on a number of external and internal factors. External factors that influence the effectiveness of cash flow planning can include the conditions of enterprise management, forming product prices and government support. The most important internal factors are: the subject of work and the main company resource; significant variability of factors of the internal environment and the need of making decisions under significant uncertainty of these factors; the main operational activities of the company; economic results of the company (losses, the lack of funds, etc.).

The current system of cash flow planning principles allows simplifying the task and improves

the accuracy of forecasts. The main principles among them are:

- the principle of justification of a minimum required amount of money that should be in circulation of a company to provide its liquidity. This principle has to determine the minimum amount of money required for the continuation of company operations and timely choice of methods of financing. Without reliable methods of evaluating financial needs the company may be left without sufficient funds to pay interest on the loan, payments to providers, for rent, utilities and more. An enterprise could face bankruptcy if it is unable to pay its contractual obligations, such as interest on the loan;
- the principle of the proportions of funds distribution between the main components of the production process. This principle is determining the amount of funds for the maintenance of fixed and working capital. It is important to know not only the value of the expected revenue, but also its distribution in the industrial and economic activities of a company, because it affects the maintenance of solvency of a company and reputation in the business environment;
- the principle of flexibility of cash flow planning. This principle is the sort of analytical reference, which should specify the required amount of receipts to balance them with the planned costs. That this should be corrected promptly in the case of reserve or deficit formation, i.e. when changing internal and external conditions of the company. By this principle one of the important tasks of planning cash flow must be solved - the equalization of payments in order to avoid excessive fluctuations of cash flow;
- the principle of evaluating the effectiveness of cash use. The fundamental relationship of cash flow to reproductive processes occurring in the company determines the methods of evaluating cash flows in the process of their planning according to various criteria. In terms of ensuring adequate solvency from one side, and the required level of profitability on the other, the analysis of cash flows in the process of their planning is a necessary phenomenon that allows an overall evaluation mechanism

of cash flow planning of an industrial company;

- the principle of intervals (spacing) and planning methods adequacy. It's necessary to admit that the choice of cash flow planning justification method should take into account the time measurement of planning that promotes adequate methods and maturity of the plan and, therefore, increases the accuracy of forecasting calculations. (Igonina, 2004)

3 TYPES OF PLANNING AND ITS MAIN STAGES, THE MAIN FEATURES OF THE PAYMENT CALENDAR ADJUSTMENT

Cash flows of the company should be planned as for the current period and also for the medium and long term periods, because for all production processes substantial cash investments throughout the period of the functioning of company are required. According to this, there are several types of cash flow planning for businesses: strategic (long-term) planning (1-3 years), current (mid-term) planning (up to 1 year) operative (short-term) planning (month, quarter). Each type of cash flow planning of company is a part of a comprehensive plan for the development of a company and has certain characteristics of planning process organization. Thus, the strategic planning is a tool that will facilitate management decisions regarding cash flow. In its terms the policy of a company cash flow formation will be developed. As a part of a current planning the revenues and expenses of funds planning, forecasting the balance of cash and forecasting of income will be implemented. Within the operational planning integrated budgets of funds that should contain elements that reflect the scope, purpose and period of the individual payments will be developed. So here it is also necessary to develop a short-term plan for shorter periods (month, decade) in the form of payment calendar.

Payment calendar is a plan of production - financial activities organization, in which all sources of cash revenues and expenses for a specific period of time are interconnected (by the calendar). It completely covers the circulation of money of the company, makes it possible to link

the cash revenues and payments in cash and noncash, and ensures permanent solvency and liquidity.

The payment calendar is being drawn up by the financial service of the company. The targets of the cash flow budget are divided by month and smaller periods. The terms are determined on the basis of the frequency of major payments of the company.

In the process of the payment calendar establishment the following objectives are decided:

1. The organization of temporary docking of revenues and future company expenses accounting;
2. The daily record of changes in the information base;
3. The calculation of the need for short-term financing;
4. Analysis of the financial market searching for the most reliable and profitable place for temporary free funds allocation;
5. Analysis of defaults and organization of measures to eliminate their causes.

The payment calendar is based on the actual information base of cash flow, which includes: contracts with contractors; accounts to pay for the product; bank documents of revenues; schedules of wages; status of payments to debtors and creditors; law on time payments on financial obligations to the budget and extrabudgetary funds.

For the effective establishment of a payment calendar the financial manager needs to control information about balances in bank accounts, expenses, average balances for the day, the state of marketable securities of the company, planned revenues and payments planned for the future.

The structure of the cash flow budget (CFB) is similar to the structure of the report of cash flows in the company. However, it is not a regulated but management form, so it has some differences.

The CFB consists of three major parts: operating, investing and financing activities.

Operating activities include the production of goods and services and their implementation. Revenues and expenses exist in operating activities.

Investing activities include long-term investments and revenues from the purchase of fixed assets and other investments. This part of the plan is strategically important because without the investment development there will be no company.

Financing activities are the most important part for "combining" the whole budget. Planning of operating activities is ensured by a number of separate departments of a company. Investing activities are planned by management and production units. Financing activity is planned by an accounting company and the financial department. But after the calculation and checking of data it can happen that the cash flow from current activities will be unfavorable. This does not mean that it is negative. In CFB there are two lines: cash balance at the beginning and the end of the period. Therefore, in case of having extra money owners may decide to prepayment of the credit or investing in fixed assets. In case of having a shortage (negative balance at the end of the month) owners may seek additional funding.

Typically, this budget is made for a year being divided into quarters and months. Budgeting is usually done by managers or owners, as it's their task to determine the strategic priorities of the company. In addition, the preparation of the CFB for a year is not as informative as for a shorter period, as this budget is not meant for company performance but to provide its financing. Therefore, we consider only the process of budgeting for a short period of time (month or quarter).

The process of cash flow planning per month consists of several stages:

- **Stage I** deals with a prognosis for the current month. It's usually conducted on the 20-25th day of the month. At this stage specifying data from departments is collected to determine the balance of cash on hand and in accounts at the end of the month. This amount of the cash flow budget for the next month will be a balance at the beginning.
- **Stage II** means gathering of information from all the departments about expenses and revenues in a planned month. Planned revenues and expenses must be generated being divided for weeks, sometimes even days. This is done in order to avoid cash gaps

not only at the end of the month but also for the entire period. Typically, this method of planning helps unstable companies which only began to use financial and economic planning.

- **Stage III** means the calculation and checking of the cash flow budget. The economics and planning department deals with this process. It is important that in a common information system there was general CFB and the application of all departments till the next stage. For each item of expenses their codes can be determined (they can be unique).
- **Stage IV** foresees the discussion of the cash flow budget in the budget committee. Small businesses may not have the budget committee, and then there is a discussion among all the participants of the cash flow budget establishment and the management of the company. At this meeting the economics and planning department presents a cash flow budget broken down into days or weeks. Upon request each cost item can be detailed. This is achieved through the use of software.

Let's us review how the control of cash flow is being carried out. If such a plan has been made, all money orders must be signed by the head of the economics and planning department, because this department should monitor the payment within the plan. Once the economics and planning department notes excess payment or non-receipt of revenue (credit), it sends a signal to the finance manager for a decision or search who is guilty. This can be a sales department, a production department or an accounting department, which calculated taxes incorrectly. When the company planning system is perfectly arranged, a reduction of bonuses due to incorrect calculation may be applied and for compliance with the plan the workers receive an additional bonus.

The result of the development of a cash flow plan can be manifested both either in a deficit or surplus of cash flows. Therefore, at the final stage of cash flow management they both are optimized by balancing volume and time, synchronizing their formation in time and optimizing the cash balance on the current account.

Both deficit and excess of cash flow have a negative impact on the company. The negative effects of deficit of cash flow can be manifested in

the reduction of company liquidity and solvency, in the increase of overdue payables to suppliers of raw materials, in the increase of the share of overdue loans after the received financial credits, in wage arrears, in the increase of the financial cycle duration and ultimately in the profitability decrease of company's equity and assets use.

The negative effects of excess cash flow can be manifested in the loss of real value of temporarily unused funds against inflation, loss of potential income from the unused portion of funds in short-term investments of the latter, which ultimately also affects the level of return on assets and equity.

The majority of financiers consider that the amount of cash flow deficit can be balanced by:

1. raising additional long-term debt or own capital;
2. depriving of non-core fixed assets;
3. costs shortage;
4. improving the work with current assets;
5. reducing the investment program of the company

The amount of excess cash flow must be balanced by:

1. the increase in investment activity of the company;
2. the prepayment of long-term loans;
3. the expansion or diversification of activities.

In the process of optimizing of cash flow over time two basic methods are used: alignment and synchronization. The alignment of cash flows aims at smoothing their volumes in individual intervals of the reporting period. This optimization method eliminates some extent seasonal and cyclical variations in the formation of cash flows (both positive and negative), optimizing parallel average balances and increasing liquidity. The results of this optimization method of cash flows over time are measured using standard deviation or coefficient of variation, which should decrease in the process of optimization.

The synchronization of cash flows is based on the convariation of their positive and negative types.

During synchronization there must be ensured the increase in the correlation between these two types of cash flows.

By integrating operating, current and strategic cash flow planning in a single process the consistency of cash flows with the tactical and strategic objectives of a company in time and space can be achieved. This approach to cash flow planning concepts is also aimed at ensuring constant financial balance; at achieving of liquidity and solvency; at maintaining the appropriate level of business activity.

The process of cash flow planning implementation includes the following steps:

Step 1 - planning without automation. At this stage of planning departments give their notes with data, the economics and planning department introduces them into one system and prints them for managers. The duration of this phase is the greatest, because in the process of its implementation the following is defined: what types of plans have to be made, who is responsible for what, what terms should be possible. Typically, this phase lasts about three to four months, depending on the size of the company and the interest of the chief manager and departments in implementing the planning.

At this stage there are various consultations between the chief manager, the chief accountant and the head of the economics and planning department. The chief manager wants to understand how effectively the company works, what income or loss there is, how much money they have and who has the debts.

Step 2 - automated planning. At this stage an information system for collecting data from departments and their consolidation is created. Through the informatization service of the company the process of drawing up plans is being automated.

At the stage of automation there is also the need to provide connectivity between budgets. Major units of the cash flow budget should intermingle with two other budgets, for example, the account balances and cash register in the budget for the balance sheet balances must be equal to the cash flow budget.

Step 3 - formalized planning. At this stage planning regulations are being developed including the following: departments involved in planning; terms of information preparation; various options for development; process of drafting and approving plans; responsibility for plan implementation.

The implementation of the cash flow planning usually needs about six months. An extremely important factor is the determination of a chief manager. Its success depends entirely on how he is interested in implementing this planning. Sometimes, production departments are not willing to plan, they might feel that it is time consuming and is not appropriate. In this case, the position of a chief manager is crucial.

4 CONCLUSIONS

Consequently, the cash flow planning of a company is based on a system approach that combines the goals, objectives, methods and principles of planning with the types of plans that specifies and complements each other covering all aspects of the business. Due to the need to adapt the system of financial planning to changeable business environments there is a need to build a system of integrated financial planning.

Integration of financial planning allows to minimize administrative costs and consider the risk factors in the process of making plan decisions to ensure the financial stability of enterprises. The introduction of a conceptual approach to financial planning system will facilitate more effective cash flow planning through planning decisions adjustments depending on the level of financial stability of enterprises.

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CRIMINAL LAW METHODS IN THE COUNTERACTIONS AGAINST CORRUPTION

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Abstract

One of the main lines of the National Anti-Corruption Strategy, approved by the Decree of the President of the Russian Federation is the further development of the legal basis of such counteracting. The analysis of the supervisory work indicates that the bribery is one of the most common crimes in the area of corruption. Bribery is a typical and distinguishing manifestation of corruption, the most dangerous criminal phenomena that undermines power bases and administration, discredits and impairs their authority, affecting citizens' rights and interests. Bribery is a collective juridical term that includes three independent formal components of an official crime: against state power, interests of the state service and bodies of local self-government, receiving and giving bribe, as well as bribe agency. Receiving and giving bribe are two interrelated criminal acts; they cannot be committed independently, without interrelationship, which means they are always in the state of indispensable implication, where the absence of the fact of the giving bribe means the absence of the fact of receiving it. Legislatively the fact of receiving bribe considers as a serious crime, with all ensuing penal and legal consequences, and relates to gravest crime according to the article 290 of The Criminal Code of the Russian Federation. The novelty of the legislation is the introduction into the criminal law the responsibility for promising and offering the assistance in bribery. According to the law, responsibility for this crime comes with the fact of promise or offer of bribe agency.

Keywords: bribery, corruption, responsibility, offer of bribe, receiving bribe

1 INTRODUCTION

Criminal policy of the state is variable; at present the issues of improvement of legislation and law enforcement in the field of combating corruption through the development of their scientific and methodological foundations being its priorities. Burning topic to counteract corruption behavior

subjects to careful investigation by the executive bodies and is a subject of public scrutiny.

Among the tools of combating corruption are the issues of implementation of requirements of international anti-corruption legal acts in the framework of national legislation, the search of optimal technologies to fight corruption, the scientific basis of measurement of corruption level. The Russian Federation has made fundamental steps in this direction: the UN Convention against Corruption and the Convention of the European Council on the

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amenability for corruption have been signed and ratified, a number of anti-corruption laws have been adopted, anti-corruption standards have been formulated, the Presidential Council for Combating Corruption has been formed, activities of law enforcement authorities in this regard have intensified.

2 METHODS OF THE ANTI-CORRUPTION DRIVE IN RUSSIA

At present the improvement of the legal framework of combating corruption both at the federal and regional levels is continuing.

Thus, the Federal Law of 04.05.2011 № 97-FL "On the Amendments to the Criminal Code of the Russian Federation and the Code of the Russian Federation on Administrative Offences in connection with the improvement of public administration in the field of combating corruption" (Federal Law №-97, 1996) has made a number of significant changes to the criminal and administrative legislation of Russia.

In particular, the Criminal Code of the Russian Federation (Federal Law №-63, 1996) regulates restriction of liberty and imprisonment as well as a new procedure for calculating fines - up to one hundred times the amount of commercial graft or bribery (from 25 thousand rubles up to 500 million rubles) for such crimes as commercial graft (art. 204 of the Criminal Code), giving a bribe (art. 291 of the Criminal Code), receiving a bribe (art. 290 of the Criminal Code). Criminal liability is differentiated depending on the size of the bribe - in a simple amount, in a significant amount or in a large or very large amount.

Criminal liability has been introduced for the mediation in bribery (art. 291.1 of the RF Criminal Code), i.e. for the direct transfer of bribes on behalf of the bribe-giver or taker or any other activity that enables them to achieve the agreement on the giving or receiving a bribe in a large (extra-large) amount, for promise or offer of mediation in bribery.

The CC of the RF doesn't include a provision under which foreign officials and officials of public international organizations that have committed crimes against the state, the interests of public service and service in local government, are criminally liable in cases stipulated by the

international treaties of Russia. It's been provided that the mentioned above foreign officials and officials of public international organizations are criminally responsible for giving and receiving bribes and mediation in bribery on a common basis.

At the same time according to the Code of the Russian Federation on the Administrative Offences (Federal Law №-195, 2001) the statute of limitations for the bringing to administrative responsibility for the violation of the Russian legislation on combating corruption has been increased - from 1 to 6 years from the date of the administrative offense, and administrative responsibility has been introduced for the illegal transfer and illegal offer or promise on behalf or for the benefit of a legal person to the official of money, securities or other property, rendering him property-related services, provision of property rights for his actions (or inaction) associated with the occupied office. Besides, the procedure for the provision of legal assistance in cases of administrative offenses has been defined.

The Federal Law of 21.11.2011 № 329-FL "On the Amendments to Certain Legislative Acts of the Russian Federation in connection with the improvement of public administration in the field of combating corruption" (Federal Law №-329, 2011) has made changes in the field of banking secrecy. Thus, lending institutions are now required to issue, on request, information on transactions, accounts and deposits of individuals determined by the President of the Russian Federation to the officials of federal government agencies and top officials of the subjects of the Russian Federation (heads of the supreme executive bodies of the subjects of the Russian Federation) in the case of checking information about the income, property and property obligations.

Tax authorities must also give available information about the income, property and property obligations on the requests of the officials of federal government agencies.

Another innovation was dismissal of state and municipal employees due to the loss of trust; it was the only possible form of responsibility in case of failure to prevent and (or) regulate the conflict of interests; in case of failure to provide information on income, property and property obligations or deliberate submission of false or incomplete

information; participation in the management body of the commercial organization, carrying out entrepreneurial activity; participation in the management bodies, trustees or supervisory boards, other bodies of foreign non-profit non-governmental organizations.

The list of administrative offenses that require administrative investigation includes violations of the law on combating corruption.

Federal executive authorities and law enforcement agencies adopted a considerable amount of legal acts aimed at the organization of the anti-corruption activities (including the General Prosecutor's Office, Investigation Committee, the Ministry of Justice, Ministry of Internal Affairs, Federal Drug Control Service of the Russian Federation, and other departments).

The main areas of the departmental legal regulation of combating corruption have been the following questions:

- ethical behavior of civil servants;
- the order of the anti-corruption expertise of departmental regulations and their projects;
- the formation and activities of the commissions on compliance to the official conduct of employees and resolving conflicts of interests.

Studies show that the decrease in the reported crimes of corruption is caused not by the decrease of the level of corruption in the country, but by the lack of results in the work of law enforcement bodies in a very high latency of corruption environment.

This conclusion is confirmed by both the results of numerous sociological surveys and by the studies of latent delinquency.

Combating corruption has become an independent trend of public policy recently. Therefore, forms, methods and tools for its implementation are still in the formative stage. Meanwhile, defining the efficiency criteria of the state policy in the field of combating corruption is the essential point. We must not forget that the efficiency is a meaningful sign of any social activity. Not being correlated with the specified criteria for certain legal, social, organizational basis of content, it is an abstract category and has no value in terms of social practice. Scientists have made successful attempts to classify and

organize the general terms of efficiency, to delimit its conditions and factors, to develop a common and private research methods of the terms of efficiency (D.N. Kapovich (2012), A.V. Makarov & A.S. Zhukov (2014), V. Mikhailov (2013), M.A. Shalimova (2014), T.V. Filonenko (2014) and others). Criteria and techniques evaluating the performance of various state and legal institutions have been offered. Besides, technologies of detection and improving performance efficiency of individual public bodies have been designed and extensively used. However, it is obvious that the fight against corruption has many specific features that must also be taken into account, as well as the diversity of the phenomenon under investigation. Thus, a systematic analysis of the Federal Law of December, 25, 2008, № 273-FL "On Combating Corruption" (Federal Law №-273, 2008) reveals the following areas of combating corruption:

1. prevention of corruption: anti-corruption analysis of the legislation and its improvement; improvement of the personnel policy of the state, methods of selection and training officials, monitoring their activities, social security of the officials; identification and elimination of conditions and factors that contribute to the commission of corruption crimes; formation of legal culture of society, creating an atmosphere of intolerance towards corrupt behavior; promoting the development of the institutions of parliamentary and public scrutiny;
2. fight against corruption: detection, suppression and investigation of the corruption offenses; bringing the perpetrators to justice;
3. elimination or minimization of the effects of corruption: compensation for damage caused by illegal actions; creating effective mechanisms to protect the rights of citizens and organizations, violated by the acts of corruption; Increasing the citizens' trust in government and its officials.

The mentioned above areas are closely connected and can be implemented only comprehensively as a single mechanism, including regulatory, institutional and dynamic components. Therefore, the criteria for evaluating the effectiveness of anti-corruption policy should be associated with the results of the activities of

specific government agencies, local government officials, organizations in these areas and as well as with the general social effects of this mechanism.

The research of the condition and problems of fighting corruption in the RF conducted by the SRI of the Academy of the General Prosecutor of the Russian Federation suggest that the population of the country, civil society institutions, international organizations and experts still evaluate the degree of corruption in all spheres of relationships and levels of state power in Russia as high.

And the level of corruption in the field of access to the state order, passing inspections and allocation of land is the highest.

According to the Fund "Public Opinion", overwhelming number of respondents assesses the level of corruption in Russia as high - 81%, as average - 10%, and only 2% of the respondents believe that the level of corruption is low.

The study of jurisprudence in criminal cases of bribery shows that citizens actively use the bribe as a means of getting rid of responsibility, administrative penalty for any offense or criminal prosecution. Simultaneously, in the minds of citizens most law enforcement bodies in charge of fighting corruption are corrupters themselves. At the same time there is the need for public awareness of citizens in the exposure and arrest of high-ranking corrupters. However, the reason for this is not an outrage that someone is violating the law but mostly traditionally inherent dislike of officials in the minds of Russian citizens. According to some experts, this attitude to corruption is not a legal consciousness but a class feeling; they have different origins and different consequences.

Studies of public opinion showed a high degree of social tolerance towards corruption. Here we can see a certain gap of perception reality on abstract and household levels. Citizens support public accusations of corruption, as well as strict government measures to respond to it eagerly, but they prefer to settle personal problems through bribes. To combat corruption effectively the establishment of an effective system of financial control and audit of the property and sources of income of officials is necessary, as in its current state, it does not allow delimiting the illegal income

and assets reliably. An essential element of this control should be a legislative solution to the issue of controlling costs, since the declaration of income is only one component that facilitates the identification differences between actual and unspent funds received.

Among the anti-corruption standards aimed at preventing corruption in the public service the obligation of state and municipal employees to provide information on income, property and property obligations in respect of himself, his spouse and juvenile children has the leading position. The implementation of this institution is a prerequisite and necessary institutional basis to identify the corruption income of the officials.

3 DEFECTS OF THE ANTI-CORRUPTION LAW

Bribery is the most typical and characteristic manifestation of corruption, of this dangerous criminal phenomenon that undermines the foundations of power and control, discredits and undermines their credibility, affects the legitimate rights and interests of citizens.

Bribery is a collective legal term that encompasses a composition of two independent malfeasance against the state, the interests of public service and service in local government - accepting a bribe and giving it.

Accepting a bribe and bribery are two interrelated criminal acts, they cannot be committed by themselves, independently, i.e. they are complicities: the absence of giving a bribe means the absence of its acceptance. But according to the law, bribe-taking is regarded as much more socially dangerous act, which refers to the category of very serious crimes with all negative penal consequences for the guilty official (in accordance with the provisions of Art. 290 of the Criminal Code of the RF).

The law formulates signs of receiving a bribe (Art. 290 of the Criminal Code of the RF) as obtaining a bribe in the form of money, securities, or other property by an official, a foreign official or an official of a public international organization in person or through the intermediary, or in the form of rendering illegal services of a material nature, providing other property rights for action (inaction) in favor of the briber or individuals represented by

him, if such actions (inactions) are included in the official powers of the official or if he can promote such actions (inaction) due to his official position as well as general protection or connivance in the service.

The Federal Law of 04.05.2011 № 97-FL “On Amendments to the Criminal Code and the Code of Administrative Offences of the Russian Federation in connection with the improvement of public administration in the field of combating corruption” (Federal Law, 2011) has made significant changes in the criminal law concerning punishment for bribery crimes.

The Law has introduced criminal responsibility for mediation in bribery (Art. 291.1 of the Criminal Code), i.e., for the direct transfer of bribes on behalf of a bribe-giver or taker or any other actions facilitating to achieve or implement the agreement on giving and receiving a bribe in a large (large, extra-large) amount, promise or offer of mediation in bribery.

The mediator, acting as a link between the briber and the bribe taker, performs one of the actions, directly transmits bribe to the appropriate official or promotes implementation of the agreement and the receipt of a bribe between them (for example, property-related services, or other property rights, time and place of execution of documents about it, etc.). He always acts on behalf of one of these persons.

The absolute novella of the Law N 97-FL is an introduction to the criminal law the provisions on liability for a promise or offer of mediation in bribery (part 5, Art. 291.1 of the Criminal Code). This norm criminalizes two forms of criminal behavior. The difference between them, according to V.I. Tyunin (2011), is in that who is the initiator of committing acts of mediation. If the initiative comes from the potential mediator, it is an offer of mediation, if it comes from the potential bribe – giver or taker, it is the promise of mediation.

According to the meaning of the Law, responsibility is incurred for mere promises or offers of mediation actions. At a time when a potential mediator in verbal or any other form expresses the intention (at the offer) or agrees

(with promises) to commit acts constituting *Actus reus*, under Part1, Art. 291.1 of the Criminal Code, the crime is considered ended.

In this connection, the question arises concerning the legal nature of this crime (in terms of its relationship with the act, the signs of which are described in Part 1, Art. 291.1 of the Criminal Code). Views of some researchers, having appeared in legal literature, considering offer or promise of mediation in bribery as a step to bribery can hardly be sustainable.

According to paragraph 11 of the current Resolution of the Plenum of the Supreme Court on February 10, 2000 N 6 “On judicial practice in cases of bribery and commercial bribery” (Bjulleten' Verhovnogo Suda RF, 2000), expressed intention of a person to give (or receive) cash, securities, other property or allow illegal use of material resources in cases when a person hasn't taken any actions to implement his intentions cannot be characterized as an attempt to give or receive a bribe or as a commercial bribery. Thus, it appears that a person that has expressed an intention to give a bribe and get it, is not subject to liability, whereas a person who has expressed an intention to pass this bribe directly can be sentenced up to 7 years of imprisonment according to part 5, Art. 291.1 of the Criminal Code of the RF.

4 CONCLUSIONS

Summarizing it should be noted, that the problem of corruption is not confined to national borders and international debate, exchange of experiences and best practices of combating corruption are very important.

It should be indicated that the vagueness or ambiguity of rules, duplication or excessive variability of legal prescriptions provoke corruption risks, since they create a field for arbitrariness on the part of law enforcers.

Strict compliance with the rules of legal techniques that would eliminate the ambiguity of interpretation of the law, strengthen the expert support of the legislative process and expand the field of public debate on key bills should be achieved.

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ACTIVATION OF INVESTMENT ACTIVITY OF AGRICULTURAL ENTERPRISES IN MARKET CONDITIONS IN UKRAINE

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Abstract

In the article the financial flows of agricultural enterprises in the region are analyzed in order to improve their management. The necessity to develop methods of improving the existing definition of the optimal structure of financial flows of agricultural producers is due to theoretical and practical interest in the content and the basic elements of financial flows of agricultural enterprises. Through economic activity, farmers most actively interact with the banking sector. To mobilize a large part of assets, credit institutions provide financial services to business entities. In addition, they make a redistribution of financial flows, on the one hand, due to customers' obligations, on the other - in order to obtain financial benefits and increase their income. At the same time, counter financial flows of agricultural enterprises of the region that are being formed have a certain level of net flows. The greater the balance of oncoming flow is, the more globally the economic conditions change. Also discussed in detail are the innovative aspects of agriculture production and various aspects of logistics in agriculture. An effective logistics system associated with AIC is meant to optimize supply chains from primary product through processing to the final consumer.

Keywords: management, financial flows, efficiency, agricultural enterprise, analysis, regulation

1 MANAGEMENT OF FINANCIAL FLOWS OF AGRICULTURAL ENTERPRISES IN THE REGION.

The need for areas of improvement in existing methods for determining the optimal structure of financial flows of individual agricultural producers is due to the theoretical and practical interest in content and basic elements of financial flows of agricultural enterprises in the region.

Determination of financial flows in practice is usually based on the sum of separate financial

flows of large agricultural enterprises and organizations. In modern economic literature, this method is preferred.

In our view, the definition of financial flows of regional AIC as the sum of flows of leading agricultural companies in the region can be used in cases when the economy of the region is formed by the activity of one or more businesses. However, in the current economic situation financial flows of regional AIC have more diverse structure, reflecting not only the flow of agricultural enterprises, but also the population, farms, local authorities, local governments and the state budget. All formulas measuring financial flows are constructed by the selection of data from

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companies' balance sheets or their financial and statistical statements.

At the same time, as defined in the economic literature, the balances in the accounts of agricultural enterprises (AIC) represent the accumulation of reserves or margins on a specified date. The value of balances in some way dependent on the financial and industrial activities of an economic entity can not be used as an objective assessment of the financial flows. Significant statistical activities of both financial and production activities of AIC are based on the determination of account balances, the values of receipts and payments on a certain date. This method is necessary to determine the absolute values of the indicators, and to ensure their comparability, to identify the changes in the value of assets and liabilities as a result of the dynamics of market prices and the exchange rate of hryvnia against foreign currencies.

But the definition of financial flows of agricultural enterprises in the region requires a different approach, which should reflect its focus not on one single transaction of agricultural products, but on the totality of economic transactions carried out in a period of time in the region.

Therefore, it is appropriate to consider all business activities of agricultural enterprises in the region as debit and credit turnovers, which will better identify the direction of financial flows in the whole.

In our opinion, there are such important principles of effective management of financial flows of agricultural enterprises in the region as:

- comprehensive detection of virtually all the funds involved in the economic activities of the region;
- methodological consistency;
- the unity and consistency of tools and methods for determining the financial flows of agricultural enterprises.

Taking into account the flow of almost all the resources involved in economic transactions is enabled by the process of determining financial flows of agricultural enterprises in the region, which is built on information about the flow of funds in the accounts of the banking sector in the regional economy. In this case, the current system of economic accounting transactions and mutual economic agents implies that they are both

debtors and creditors. That's why there is a set of economic agents.

Through economic activity agricultural enterprises in the most active way interact with the banking sector. To mobilize substantial part of the assets of credit, organizations provide financial services to business entities. In addition, they make the redistribution of financial flows, on the one hand, due to clients' obligations, on the other hand, in order to obtain financial benefits and increase their income. Thus, counter financial flows of agricultural enterprises of the region have a certain level of net flows. The greater the balance of oncoming flow is, the more globally the economic conditions change. The increasing financial operations, growth of investment opportunities in agricultural enterprises and increasing agricultural production is due to the revitalization of the institutional sectors of the regional economy, with rising deposit operations in credit and financial institutions, expanding the flow of payments to budgets of all levels. All changes are almost simultaneously displayed on the size of the resource base of the banking sector of economic activity in the region: they are reflected on the amount of the resource base of the banking sector in the region: i.e. increasing lending operations of banks, growing number of current and settlement accounts of agricultural enterprises, in all types of deposits, and in increasing issue of securities. Naturally an increase in turnover in all types of operations or cash flows of agricultural enterprises of the region takes place. However, some of the financial flows are not involved in credit and payment operations of the banking sector in the region. Typically, these funds are sent to the shadow economy.

Nowadays agro-industrial complex of Ukraine is in crisis, which caused negative effects of agrarian reform, inflationary pressures, fiscal policy, financial inability of agricultural producers, and lack of government support. In these circumstances, it is becoming important for the national agro-industrial complex to activate investment in enterprises of agro-industrial production. The solution of this problem will help to overcome the economic crisis recovery and to grow productive capital, increasing efficiency of product competitiveness and resolving a range of socio-economic issues AIC (Parkhomets, 2012).

In the first quarter of 2013, foreign investors invested 1.56 billion dollars U.S. in the economy of Ukraine direct investment (equity), which is 1.8 times more than in the corresponding period of 2012 (885.1 million dollars U.S.). Investments came from 136 countries. The five investor countries included Cyprus - 32.4% (17.69 billion dollars), Germany - 11.1% (6.12 billion dollars), Netherlands - 9.7% (5.26 billion dollars), Russia - 6.9% (3.81 billion dollars), Austria - 5.8% (3.42 billion dollars). In the next two years, the state will provide assistance to almost all sectors of agriculture. This support will come from the State Program intensification of economic development for 2013-2014. Implementing the provisions of this document, Ukraine will grow gross production in agricultural sector to 260 billion USD per year. Budget revenues will grow to 48 billion UAH.

To achieve these ambitious goals, the Ministry of Agriculture in cooperation with central and local executive authorities continues to perform a number of tasks as part of economic reforms and the State Program of economic activation for 2013-2014. Because of this, food security in the state will be 100% ensured. Investment climate in the agricultural sector will be improved and its productivity increased. Thus, the production of gross agricultural output will be increased to 260 billion UAH, exports of agricultural products will reach 22 billion dollars a year. This will increase the revenues of the consolidated budget to 48 billion UAH. Lack of long-term loans should be considered as the main factor in reducing the activity of the investment process in the agricultural sector. Due to the lack of pledge, seasonality and risks of agricultural producing, banks cannot provide medium- and long-term loans to the agricultural enterprises (Y.M. Ostapchuk, 2014).

The main source of activating the investment in enterprises in agricultural areas are own funds, bank loans and government subsidies, credit co-operatives and foreign investments. In the overall structure of sources of financing investment activities the most important are funds of enterprises and organizations, which is an average of 66%. This funding source dominates the total volume of revenues from other sources such as state and local finance, loans, foreign investment and other investment sources (Kabanov, 2010).

2 TECHNIQUES AND TOOLS OF AGRICULTURAL RISK CONTROL

Agrarian reforms and the establishment of market relations, the change in forms of ownership and management significantly increase the uncertainty of the socio-economic processes in agriculture and, therefore, enhance the impact of the risks agricultural businesses are exposed to. The impact of macro-economic decisions on the activities of each farmer is increasing. Risk is an objective element of entrepreneurship. But agriculture is much greater risk due to characteristics unique to this type of business. Seasonality of production, long-term circulation of capital, a significant dependence on climatic conditions, a large number of businesses, the impossibility of coordination of all activities - this is not a complete list of all the factors.

All available mechanisms and instruments to manage agricultural risk management to minimize risks and protect farmers from their effects can be divided into three levels:

The first level – tools used by farmers themselves – effective agro technologies, rational use of fertilizers and plant protection products, reasonable provision of equipment and highly qualified specialists, diversification of production and cooperation, creation of marketing schemes, vertically oriented enterprises etc.

The second level – to use tools a farmer must apply to the private sector.

The third level - the macro-economic methods that are based on regulatory government policies at agricultural markets and government programs to support agrarian sector make up the third level in the system created to minimize the risks (Ilyashenko, 2004).

Let us look at the existing mechanisms and instruments used to minimize production and market risks.

2.1 Diversification of agricultural production

Diversification, as well as specialization, is a tool to reduce the existing risks and, therefore, maintain development of an enterprise. To minimize the risks and obtain stable financial performance agricultural enterprise may opt for specialization, or maintenance of existing

production methods and diversification of its activities.

There are several types of diversification:

- Traditional agricultural diversification;
- Diversification by producing alternative products;
- Manufacture of non-agricultural products and services.

Traditional agricultural diversification involves the processing of agricultural products.

Diversification by means of production of alternative products is growing non-traditional crops and animals.

Diversification by producing non-agricultural products and services.

2.2 Financial and credit support

Currently, the level of financial and credit infrastructure is a major issue in agriculture. With the lack of own financial resources and their limited involvement agricultural businesses cannot conduct effective production and ensure profitability.

Questions of ownership of agricultural land, undeveloped land markets, significant deterioration and moral obsolescence of fixed assets remain unresolved. The absence of a land market makes it impossible to use it as loan collateral, which hinders the development of long-term loans.

2.3 Agricultural insurance

The main purpose of agricultural insurance is to compensate farmers' harvest losses arising from the impact of climatic risks. Another purpose of insurance is to improve the financial situation of farmers and to ensure better access to credit.

The current financial strength of domestic insurance companies is not sufficient to pay to farmers when the insurance case is caused by the act of systemic risks (Andriychuk, 2012).

2.4 Problems in AIC Logistics

Recently, logistic system has been increasingly used in the practice of agricultural enterprises. The concept of agricultural logistics system is

derived from the specific term "logistic system" and general term "system".

System (from Greek - whole, composed of parts, links) is the set of elements that are in relations and connections with each other and form a certain integrity, unity.

Logistic system is an adaptive (adaptive or self-organizing) system with inverse connections, which performs logistics functions and logistics operations. As a rule, logistic system consists of various subsystems (elements), characterized by well-developed links with the environment.

Agricultural logistics system is logistic system that operates in the agricultural sector. Logistic systems correspond to the conventional notion of system since they consist of system-elements; elements are interrelated and interdependent; links ordered; links form a structure with predetermined properties.

Systematic approach involves consideration of all elements of the logistics system as interconnected and interacting to achieve the common goal of management. A distinctive feature of the system approach is optimizing operation of not separate elements, but logistics system as a whole, resulting in the appearance of the so-called synergistic effect. Thus, with the systematic approach to the business organization, logistics system is a relatively stable set of links (structural/functional business units, suppliers, customers, logistics intermediaries) interconnected and united by a common logistics management process to implement corporate strategies of business organization.

Properly organized logistics system of the company is crucial to competitive advantage, since it is aimed at reducing inventories, acceleration of working capital, reducing production costs and general logistics costs, optimal use of storage and transport capacities, and providing consumers with high-quality logistics services.

Agribusiness in comparison with other activities is characterized by rather high risk, primarily associated with the availability and quality of raw materials, making implementation of logistics technology relevant for private, regional and state enterprises. In this regard, logistics of agricultural sector companies requires a systematic approach

(Layl, Spenser, & Sayn, 2005, p. 5), implementing which well-tuned management mechanism is formed by key characteristics of the efficiency of flow of orders, products (raw materials), finance, as well as their organization and maintenance. In this case, flow control is carried out, which generates processes and operational cycles in general. The specificity of the agricultural production system allows to identify the main characteristics of logistics AIC: order fulfillment and customer service channels organization, forecasting demand for agricultural products and the volume of consumption analysis, inventory management products (raw materials) and minimizing losses due to unsteady supply, communication links and availability of information space for steady orders, depots maintenance and storage cost minimization, traffic management, optimization of the geographical location of production and warehouse facilities, the management of service; financial management, the management of human resources.

Execution of customer orders and organization of service channels are one of the basic characteristics of AIC efficient logistics, as they reflect the efficiency of the operation and organization of the sales in order to meet the client needs at the right time with the necessary product at minimal costs. Due to limitations in terms of storage, agricultural products require compliance with trade organizations in specific terms of sale, and, in particular, direct sales from local producers, firm trade through its own network, sales through intermediaries etc.

Forecasting demand and consumption analysis describe the possibility of selling the products according to expected needs. Seasonality, limited resources, and weather risks in particular make the pricing of agricultural products not only dependent on inflationary expectations and income, but also on the production technology.

Effective inventory control of products (raw materials) minimizes losses due to unsteady supply and unplanned stock movement. Given the seasonality of operating cycle, inventory control mechanisms solve the problem of the frequency of sales delivery and providing raw materials to processing enterprises. Creating stock reserves takes place in various ways: serial stock, cyclical stock, stock utilization, stock security warning margin (Kristofer & Pek, 2005, p. 8).. Stock

maintenance requires costs to maintain physical properties of stock (depreciation cost, heating, electricity), with invested assets (assets withdrawn from circulation until the implementation of the enterprise), with the risks of the stock realization (taking into account the possibility of lack of demand).

Communications links and availability of information space ensure coordination of the flow of orders. The ability to provide timely access to information sources increases the competitiveness of the logistics system.

The introduction of modern information technologies in logistics needs to address the following issues: minimizing the time of your order execution, consolidating the orders; personification access, storage of large amounts of information, minimizing the processing time in transaction orders.

Maintenance of warehouses is connected with the choice of storage facilities, and especially deciding on an alternative support of operating own warehouses or rental payment for the leased premises. Also the efficiency of warehouse activities organization storage operations is largely determined by unloading, downloading, packaging and so on. The necessity for optimal use of storage space requires the calculations of the number of storage units, their size and usability. Given the fact that in most cases the products of agriculture have short shelf life, one should focus on the location of warehouses close to the point of sale.

The efficiency of traffic management is aimed at minimizing transportation costs. The essence of logistics traffic management is the optimal way of transportation from the supplier to the consumer, taking into account the size of the possible cases of traffic, capacity of transshipment points, the current cost of the vehicle, etc (Stock J.R. Lambert D.M., 2005, p. 73-84).

Financial flows in AIC logistics involve investment to expand reproduction of agricultural production. Increasing amounts of investments require more sophisticated mechanism of their use to ensure investor protection, control of obligations, the implementation mechanisms of insurance, compensation of loan rates, lower investment risks at various stages of production and others.

Managing human resources is effective because of targeting specific people to improve the quality of performed functions. One prospect is the positioning of human resources in the management hierarchy providing compliance with relevant competence, comprehending human ability to perform certain work regardless of race, age, cultural affiliation, (Porter, 2005, p. 345).

Various aspects of AIC logistics reveal opportunity for improving the logistics of agricultural enterprise being a critical success factor in agro-business and promoting production of competitive agricultural products. An effective AIC logistics system is inextricably linked to probable profit due to optimization of supply chains as a vertically integrated agricultural farm from primary producer through processing to the final consumer.

3 INNOVATIVE ASPECTS OF AGRICULTURE PRODUCTION.

The current trend of increasing profitability of all agricultural enterprises activities is inexplicably combined with drop in the number of main types of equipment in the period of market reforms. Natural resources consumed in the production of agricultural products are not being reproduced and as a result areas with fertile soil are shrinking as well as areas of meliorated land. In recent years the usage of organic fertilizers has decreased, which led to a decrease in humus content and deterioration of other characteristics of productive arable land.

Unfortunately, we cannot rely on reproduction of labor as the workers' salary in this sector is one of the lowest in the economy, reaching only 70% of the average wage in the country in 2011 (Vlasenko, 2012, p. 31). This fact determines the intense outflow of working population from agriculture in recent years, which is not compensated by using highly efficient equipment and intensive technologies. Obviously, agricultural production, based on the preferential use of the natural soil fertility, can not last forever. Lack of nitrogen, phosphorus, potassium and other nutrients creates disbalance and quality characteristics of crops deteriorate. Thus, in recent years the amount of harvested food grain has been decreasing and figures in gross harvest have been secured mainly by feed wheat, rye and barley.

In domestic agriculture both cutting edge and primitive methods of production are present, from precision techniques (e. g., precision agriculture using satellite navigation techniques) to the archaic, in which the basic technological standards are not met. We must add the poor material and technical equipment of many farms, which reinforces the lack of operational discipline.

Initiative leaders of agricultural enterprises invite leading scientists to their production facilities, continuously monitor the latest developments in agriculture, systematically study and send their experts to study in the best educational and research centers, business schools. This leaders' attraction to progress has become as much a reality as the almost complete lack of interest or desire to make radical changes in the rest of the farmers.

Nowadays laborious agricultural production is concentrated in private households who are unable to meet the needs of the market with high-quality standardized products. There is excessive concentration of land in the use of large agricultural units (agricultural holdings) that are engaged in less labor-intensive, and highly profitable production. Against the background of the benefits of agricultural holdings in the form of intensification of agricultural production and increasing the export potential of agriculture, their further development is threatening, primarily due to growing export of certain crops, which greatly deplete the soil, and exports of mainly grain and oil.

Such rural development scenarios reflect the paradoxes of agricultural policy at the macroeconomic level. Recent years have been marked by stable growth in the gross Ukrainian agricultural produce. At the same time, there has been considerable increase in food imports. Thus, given the increase in production of domestic agricultural products (even considering the inflation) and repeated increase in food imports in this century the consumption of basic foodstuffs per capita still has not reached indicators of 1990.

4 CONCLUSIONS

Thus, on the one hand, there is growth in agricultural production. On the other hand, due to fundamental reasons lasting and stable development of the agricultural sector cannot be

sustained. These contradictions require deep analysis and, most importantly, taking immediate action to consolidate the existing positive trends, primarily of institutional character, agribusiness must not shift toward unwanted processes and enormous potential competitiveness of the industry must not lose opportunity to develop the national economy.

The main reason for the low innovation activity of domestic producers is considered to be the lack of economic interest in the mechanisms of implementing innovations into production. Enterprises conduct their own innovation activities due to limited financial resources to solve scientific and technological problems. The technical level of domestic production declines, implemented innovations are meant to improve the existing situation but they do not require significant costs. Also, the level of scientific developments implementation is being reduced and loss of scientific potential in the field of genetics (seeds and breeding) is observed. Agricultural

sector faces extremely complex task of transition from technologic to a postindustrial degradation mode of production. Scientific and technological progress and using the advanced technologies, combined with a set of organizational and economic measures are the basis for further development of agriculture in our country, which is not only the most important part of the economy, but also the foundation of national security.

Innovation activity in modern conditions has become a major factor in the development of agriculture, and its implementation is the only way to overcome the crisis and ensure sustainable development of agricultural production in our country. In conditions of socio-economic changes and increasing pressures of the global economy, our country should make accelerated transition to innovative way of development of agriculture, in order to restore this strategically significant sector of the economy on a new technical and technological basis, which corresponds to modern trends.

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BANKING SERVICE AND BANKING SERVICES: A CONCEPTUAL APPROACH

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Abstract

The article deals with the author's conceptual approach to the categories of "banking service" and "banking services" definitions under the influence of information-network economy factors. The "banking services", which include specific activities to support the product line developed in the context of direct provision of specific services, the sale of a particular product, the implementation of the specific transaction concept are narrower than "banking service", which provides all system activities, providing service in the bank for all kinds of services, banking products, transaction and results from previously executed processes, or their combinations. The modern theoretical tendencies have been analyzed regarding the bank functions in the context of client's banking service (retail banking). The banking service is identified in terms of both the process and the result. Regarding the process, of course, it belongs to the quality and efficiency of banking services, and concerning the results, it refers to the quality and efficiency of banking services respectively, which involves the sale of a banking product, providing banking services, and conducting banking transactions. That is, from the client's point of view during the banking process ("banking services"), he gets a certain set of values, including the satisfaction of client's characteristics and quality of bank products, transactions and services. However, the final stage of its relations with banks is to obtain some material benefit from the resulting set of proposed banking products and technologies, in other words, from common banking service, which appears as a set of services resulting from this process.

Keywords: *banking service, banking services, client, retail banking, process, result, service, theory of financial intermediation*

1 INTRODUCTION

In terms of the information-network economy, any expansion of banking activities primarily requires to improve the service system, that is, more rapid introduction of so-called multi-channel service providing service operations, offering and selling of products. For this, it is relevant to look O.V. Ivanova's opinion, which within the proposed

strategy of innovative activity perfection and innovative development of banks, offers to examine a bank as "services" company (Ivanova, 2011, p. 10). However, in our view, services can be considered only as an instrument that provides an opportunity to improve the quality of banking service. Loyalty to this approach is confirmed by the fact that in recent decades there were widely implemented innovations - technological ways of offering banking products and services, operations, particularly in the light of traditional cash management services for households, taking

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into account individual financial and technological capabilities of the client ("home banking", "wap-banking", ATMs with advanced features, "internet banking", etc.). As a result, according to the National Bank of Ukraine for three quarters of 2013 banks significantly increased the number of ATMs and terminals. Banks established almost 39 thousand ATMs and about 195 thousand of terminals (as of January 1, 2013 Banks established over 36 thousands of ATMs and nearly 163 thousands of terminals) (Finance.UA, 2013). The greatest number of active cards and infrastructure for their service as of October 1, 2013 were in Kyiv, Dnepropetrovsk, Donetsk, Kharkov and Odessa. The number of banks - members of the payment card systems was 143 (Finance.UA, 2013). According to statistics from the National Bank of Ukraine at the end of 2013 in Ukraine there were registered 183 banks and banking outlets retail products - 19.5 thousand units. According to the European financial experts, the best Ukrainian bank in 2013 became Privatbank, which entered the top of the best banks in the ranking of Swat "Bank of the Year 2013", leading financial magazine industry "The Banker" (belonging to the group "The Financial Times"). It should be noted that each year the experts of the magazine determine the bank of the year among financial-credit organizations of 150 countries of the world.

In 2013 the prestigious prize claimed more than 530 banks in the world, which were evaluated by a group of criteria, including as qualitative (profitability, quality of assets and financial stability) as well and quantitative (involving capital; Agreement "M & A"; introduction of new technologies, products and business-directions) (Anon., 2013). Thus, "The Banker" noted that orientation to modern technologies give the possibility for Privatbank during last year to double the number of transactions for clients through the Internet Banking system, and become a leader in the region by popularity services for the payment of smartphones. So, for success, retention and expansion of customer base, banks must respond quickly not only to fluctuations of financial markets, and in some degree - for quick needs of existing and potential clients, which serve as an important segment of households (Anon., 2013).

In general, banking service or banking services concerning the needs of households acts as a category that primarily characterizes increasing of the specific weight of their services, operations and products in the financial - credit relationship, and secondly, it promotes international integration activities under the influence of globalization. Actually, globalization foresees a network of integrated markets for goods and services as well as the rights and competencies. Logically, it changes the relationship between the seller and the buyer in which the basis of interaction acts not only capital, but also network and information (Garin, 2009, p. 20). Thus, such a category as "retail banking" needs comprehensive research in the aspect of informatively - network economy influence, which is one of the issues in modern banking theory.

2 CATEGORY "BANKING SERVICE", AS A SUBJECT FOR THEORETICAL ANALYSIS

Retail banking is a subject for analysis of both the business press, publications and complex scientific researches. In particular, certain aspects of innovative banking service activity introduction in modern terms are presented in papers of K.A. Antonov (2012), A.U. Bodnar (2012), Vasiliev A.V., Gerasimova E.B., Tishina L.S. (Monitoring kachestva bankovskih uslug: monografiya, 2004), O.V. Ivanova (2011), Y.M. Krivich (2010), and by the last research of priority directions of retail banking are devoted scientific articles of A.S. Goncharuk (2012), M.U. Starenkov (2012). However, retail banking category in terms of "service to society", which is the result of information-network economy influence factors and is considered fragmentally. According to the Law of Ukraine "On Banks and Banking Activity" banking is considered as "bringing in cash deposits of households and legal entities and placing these funds on its behalf, on its own terms and at its own risk, account opening, banking service of households and legal entities" (Zakon, 2015). Such interpretation should take into account the specifics of the banking market, as well as the specifics of the consumer goods market and also the specifics of the financial market, which are considered through the demand and supply mechanism of financial and credit

institutions. Logically, the demand for banking products, services, and operations form the basis of the needs of customers (in our study - households). It forms its financial behavior presented in three levels: client, savings and service areas.

Client needs can be grouped into three main categories:

- need for consumption items (in case of cash, products that can be purchased by cash);
- need for cash in savings in order to maintain and / or enhancement;
- need to ensure quality of cash circulation.

Then, the definition of “retail banking service”, can be represented as follows: “banking service (in the context retail banking) - is banking that provides a high level of supply of banking services, transactions, products to meet customer demand by households, savings, consumer needs and requirements, related to the circulation of money, the ultimate goal of making a profit”. (Gorditsa, 2014) In most of the sources on banking, particularly overseas, the analogue definition “banking service” as “banking services” is always present. Let us explain this statement in two directions. On the one hand, the retail banking service in translation from English means “service”, an activity that addresses the needs of anyone, called service. This category, as “banking services” market information and service

households, is more appropriate at present. It includes:

- First, the use of information resources, including:
 - Customer database;
 - A database of documents for various transactions;
 - A set of networks, which provide the opportunity to work with a variety of information objects;
- Secondly, the reverse exchange of information with customers through both personal and interactive communication;
- Third, a variety of information processing in the automatic mode, the so-called “service support” in the next stage after sale.

The proof of this statement is that banks sell the product line features over online service technology, defined set of services, products that can be used through the operation of software and hardware self-service (ATM, terminals, self-service stalls, etc.) and other forms of E-banking. However, these products, of course, cannot cover all types of banking service, and mostly contain simple banking transactions that are supported by the provision of timely information. Everyone can also give an example of the use of so-called extended service in a personal approach concerning retail banking services program “private banking”, and so on.

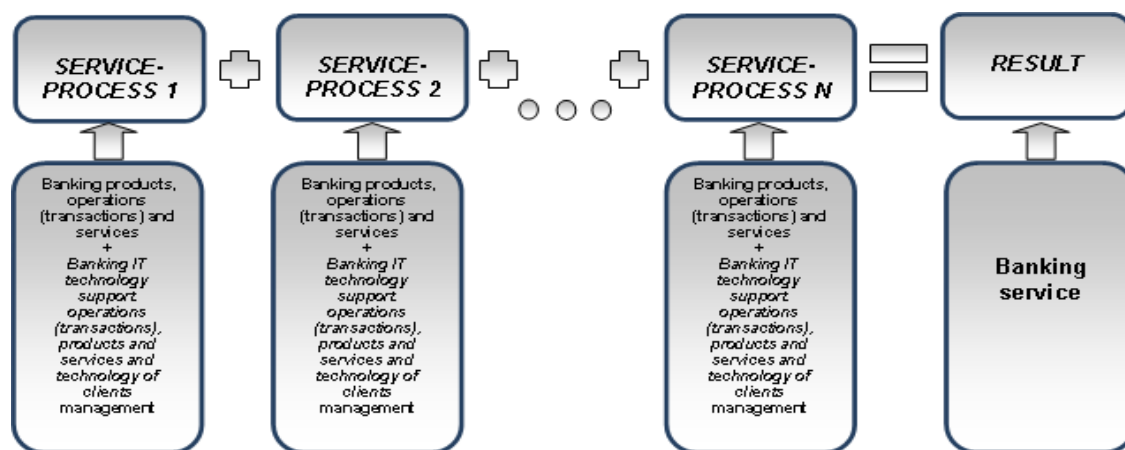


Fig. 1. Formula banking service (author's view)

On the other hand, there is also an appropriate approach which distinguishes differences of the definitions of “customer service” as “banking services” and “banking service”. This justifies the logic of differentiation of concepts: process and

result. Regarding the process, of course, it belongs to the quality and efficiency of banking services, and concerning the results, the quality and efficiency of banking services respectively, which involves the sale of a banking product,

providing banking services, conducting banking transactions. That is, from the point of view of the client during the banking process (“banking services”), he gets a certain set of values, including the satisfaction of client characteristics and quality of bank products, transactions and services. (Gorditsa, 2014) However, the final stage of its relations with banks is to obtain some material benefit from the resulting set of proposed banking products and technologies, in other words from common banking service, which appears as a set of services, and this is the result of this process (see Fig.1).

Thus, due to the set of such services, it should be distinguished: whether the bank provides traditional banking service, a complex banking service, or even refers to the system of financial supermarket.

Taking into account the above-mentioned, we will analyze communication factors of the system: a “client” - “services” - “banking service” for three-level approach to meet the needs of clients:

1. “Banking service” and “client”;
2. “Banking service” and “services”;
3. “Client” and “services”.

For the first (highest) level it is characteristic that both the client and the bank expect some results from the cooperation chain “banking service - the client”.

For the first (highest) level it is characteristic that both the client and the bank expect some results from the cooperation chain “banking service - the client”. In accordance with the necessities, the purpose of client appears in that the expected characteristics of bank product (services, operations) must coincide with their real consumption, wherein a certain level of security acceptable to the individual risk must be taken into consideration. From another point of view, the purpose of the bank represents the offer of banking products, services and operations with the loyal risk, that meet client’s needs and gives the planned profit. Consequently, this level of meeting demand proposal is the result.

For the second (middle) level – “banking service – services” - respectively are meeting service needs of the bank. For a bank the embranchment of modern service consists of such characteristics as: IT level; the use of innovative technologies;

operation ability of adjusting and removal of failings; level of own developments or dependence on other communication technological organizations; availability of the complex systems; security (avoidance of the interference possibility), the flexibility of CAS, presence of paperless accompaniment of operations. Thus, that is a level of demand that occurs in the process of banking.

For the third (lowest) level - the “client – services” - the main thing for the client is that the functional characteristics of the product line meet demand service, which in turn contains such concepts as “quality service”, namely: availability (a network of point of sale), informative and consultative support, operations efficiency, consistency, functional gap-lack of complex package of products and services; the provision of security services and products, pricing, loyalty programs.

Thus, the “service” is expected to meet the needs of high-quality banking service, which includes not only functional - technological characteristics, but also organizational approach. In relation to the point of view of bank, it is a level of demand. Consequently, in our view, the banking services can be described as activity from diminishing of duration of service, operation ability of decision-making, sequences of operations, comfort in sale products or services (personal visit to the bank and / or the use of remote banking services (RBS)), the quality of the product line, absence of concealed information and financial security providing in general. Thus, “banking services” provide concrete activity on product line service, in the context of direct provision of specific services, sale of a particular product, the realization of concrete operation. This concept is more limited, than banking service, which covers, all systems of service providing all types of services, products, operations and is the result of pre-made process or their amount. Relationship of production of the banking product line with its subsequent usage is accompanied by a variety of banking services (technological, mass, personal, innovative and the like). First, modern development of banking services is characterized by the intensive use of various marketing elements, aimed at introducing the so-called client-oriented strategy; secondly, such approach envisages that the production of concrete bank product is aimed at a concrete

client; thirdly, there are surely dependent consumer banking products, services and operations of making, especially for standardized mass products, services and operations; fourthly, the intersection of client demand with the possibilities of bank is finding of certain coordination which brings this process over in an action, that is client demand is met through bank proposal service technology and this states the continuity of the reproduction process. Starenkov M.U. approach is appropriate in which “client-oriented banking services” is considered as a service which is to be interpreted, from one side, “as a process which is directed on forming and meeting of client needs in innovative banking operations and technologies”, and from the other side, – “as a result of the bank’s relationships with clients, which is characterized by the level of client acquisition before organization – economic decision making and also by the level of their contentment and loyalty” (Starenkov, 2012, p. 10). Such position considers the client not as mass client, but a unique contractor which maximally can be involved in product designing. Accordingly this product is provided with maximally possible

key characteristics which will satisfy a client necessity in future. That is, during the period of development of the product line, the first thing to take into account is maximum possible personal consumer values that this product line will be endowed, while further cooperation with the bank as a service organization, will be characterized not as process of provision, but as certain result. Quality of service by nature is not material component, however it is a basic factor which influences on the financial constituent of this process - that is, the using of certain banking products, services, operations to obtain financial benefits in various forms of increased financial and others for both the client and the bank.

3 BANKING SERVICE IN THE THEORY OF FINANCIAL INTERMEDIATION

Taking into account these above-mentioned suppositions, it is possible to indicate the following three-level conceptual approaches concerning the significance of bank for households in modern information-network economy (see Fig 2.)

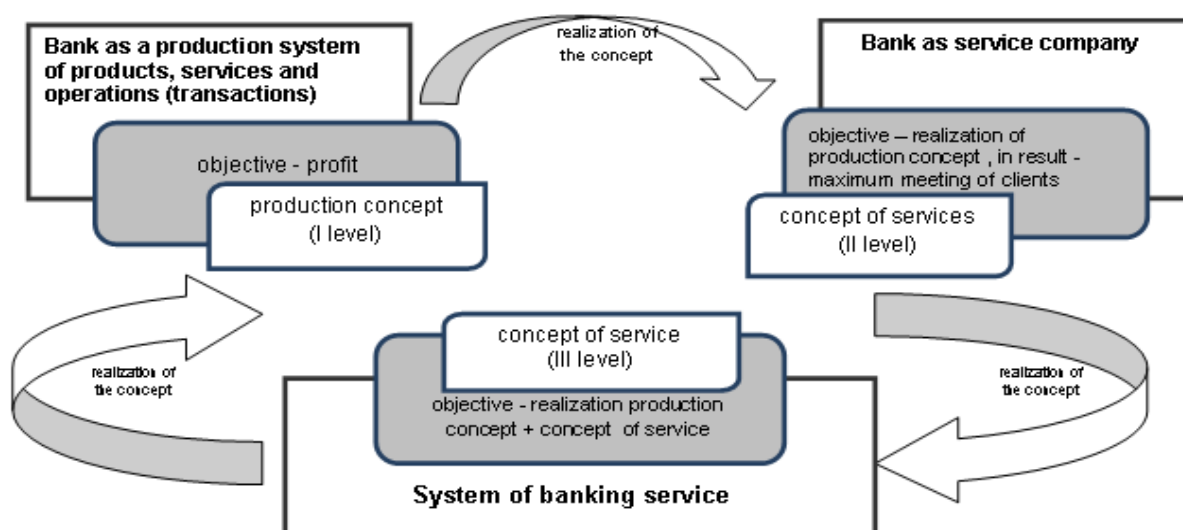


Fig. 2. Conceptual approach about the importance of bank for households in modern to the information-network economy (author’s view)

If to compare such approach (see Fig. 2) to two basic interpretations of macroeconomic theory in relation to the main banks function, banks concept review as “production” systems is a strict adherence to emission function, i.e. creation of payment means (money, financial instrumentation).

If we consider, second position - the banks as “service company” - we see a clear correspondence theory of intermediation or redistribution. In this sense, the banks are the intermediary to process of “saving-investment”. Appropriate will be the use of Corrigan’s E.G. institutional approach about existence of banks,

as the special institution, which basic activity is as follows (Kwan, 2001):

1. They provide their service agreements and manage a payment system.
2. They provide reserve accumulation to support liquidity in the economy.
3. They establish the monetary policy.

However, even before the first half of the last century, the function of banks was to conduct intermediation of the financial system on the whole by accepting deposits and credit, for today, due to the rapid development of the financial system, banks are beginning to lose its monopoly on banking services for households (money orders, consumer credits, deposits, and others like that).

According to Russian scientists Vasiliev A.V., Gerasimova E.B. and Tishina L.S. in the XXI century, thanks to the Internet, the banks will lose their dominant role in client service because clients directly, without mediators will personally implement financial transactions on major stock exchanges, which is currently one of the types of banking activities (Vasiliev, Gerasimova, & Tishina, *Monitoring kachestva bankovskih uslug: monografiya*, 2004, p. 32).

Exactly, from the theoretical point of view, theorem of Modigliani-Miller's, show that a financial structure in which a leading role is assigned to banks, loses its meaning for households, as they can both create and change their deposit and loan portfolios independently in any niche that is already occupied by an mediator, and thus, the institution of intermediation has not already been able to create wealth.

Except for it in the traditional Arrow-Debreu model allocation of money, both firms and households cooperates directly through markets, then financial intermediation in this cooperation do not play any role. A condition at this situation must be unique - perfect market at which money distribution is according to Pareto efficiency, and thus, the receipt of income for mediators becomes simply not possible (Franklin & Santomero, 1997, p. 2).

For this, Llewellyn T.D. in his "theory of the banking firm" actually focuses on market imperfections, isolating this factor with eight others, that explain banks rationally- economic activities. Only in the case where depositors and

investors will have the following information, which will give possibility without certain risks and costs to make agreement one with other, indicating a perfect market, intermediary will lose their role (123helpme, 2012).

In addition, it is appropriate that the traditional theories of intermediation in a certain degree are based on practice of the so-called transaction costs and the effect of asymmetric information. The role of transaction costs, according to Franklin and Santomero (1997, p. 14), has the right to exist because, for – first, the costs from the property evaluation for mediators, as opposed to how they would be spent by households, are not concrete, but have general character; for – second, trade costs by mediators can be diversified far easier than ordinary client would do it.

During it, financial innovations have extended the spectrum of possibilities of capital market, especially it became perceptibly due to introduction of technological and informative know-how, which have resulted in scale effect for products, operations and services. It is in the context of minimizing transaction costs it is a appropriate to use Kasuy's M. approach about multi-profile theory of production to banking, the argument of which is that diversification and introduction of new high-quality banking services, will give in the future the scale effect and will increase profitability. This concept is based on the Panzar's J.C. and Willing's R.D. theory of economies of scope, who used this concept as early as 1975 (Kasuya, 1986, p. 59). According to conception of Kasuya M., savings on transaction costs arise up, when production factor as to its production (for product) is used in the production of other product without extra costs. In case if technological and informative know-how are present, that banks give for domestic demand, these products can be used by other market participants for a certain pay, that to some extent reduces the cost of production and banks become functionally unique in their business.

Such approach allows separating another factor of banks comparative advantage as to banking services - innovation magnitude. On the other hand, minimization of asymmetric information action information, on the Diamond's D.W. conception, gives banks financial intermediation. Proof of this is that banks act as delegated

monitoring between the borrower and creditor (Franklin & Santomero, 1997, p. 3). Because of the asymmetric information, moral hazard of borrower takes place then, when there was an agreement. So, creditor will not be aware of the real motive of the borrower. Thus, bank, as a financial intermediary, for minimization of such risk uses a certain policy of monitoring and diversification credit portfolio. As a result, risks may be either absent or removed, or actively managed at the level of the bank. Except this, asymmetric information has no place to be in crediting, when credits are securitized, i.e. risks are transferred to other participants in this process, giving us dominance factor of banking service - an effective risk management.

In opinion of Kanaev A.V., "the most important difference of banks from other intermediary is combined activity on creation of credit and money in the process of transformation of savings into investment" (Kanaev, 2008, p. 14). Consequently, how to deposit, which are used for crediting, "...are accompanied emission of credit money, that is the most natural way for banks" (Kanaev, 2008, p. 15), and, transformation of credits through securitization in securities accompanied by emission as a result mechanism of repayment. So, monetary character of bank's intermediation functions is taking place and banks appear to be as unique money-and-credit intermediary. Thus, both money and intermediary bank functions pertain in modern banking service.

4 CONCLUSIONS

Retail banking - is bank activity that provides a high level of supply of banking services,

operations, products for meeting the needs by households in saving, consumption and money transfer, resulting in common profitability.

"Banking services" - an activity that provides:

- reduce the length of service;
- efficiency in decision-making;
- continuity of operations (transactions);
- forms of convenience products;
- the quality of the product line;
- no hidden information and compliance with financial security.

Thus, the "banking services", which includes specific activities to support the product line developed in the context of direct provision of specific services, the sale of a particular product, the implementation of the specific transaction concept is narrower than "banking service", which provides all system activities, providing service in the bank for all kinds of services, banking products, transaction and results from previously executed process, or their combination.

In the final case, the money banks and intermediation functions inherent in modern banking service, which appears in the form of the integration of all service functions and features create the means of payment, the result of which performance in terms of information-network economy is an innovative approach to creation a system of relationships between the client and bank, where the bank's value for the customer is presented in three main complementary perspectives: as a production system, as a service company, as a system of banking service.

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PRACTICAL ASPECT OF AUTHENTIC LEADERSHIP CONCEPT AT MEDIUM LEVEL OF MANAGEMENT IN POLAND

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Abstract

The subject of the thesis hereby is the concept of authentic leadership at medium level of management in corporations operating in Poland. The paper consists of two parts. The first academic part presents the concept of authentic management and its dimensions. The second empirical part enunciates the feedback from own research conducted by the author in 2013 in corporations functioning in Poland. The characteristic features of the concept make a research task even more interesting, because it attempts to verify the influence, which the leader exerts on their team both in the area of behavior and attitudes and the system of values of the subordinates. In the exploratory part of this study it was examined whether and, if so, to what extent the concept of authentic leadership is used in Polish corporations at medium level of management. The actual survey was conducted with the use of the Authentic Leadership Questionnaire (ALQ) version 0.1 prepared for examining of leaders.

Keywords: Leadership, authentic leadership, management

1 THE RANGES OF MEANING OF BASIC CONCEPTS

The phenomenon of leadership is a matter of common interest for both theoreticians and practitioners of management. It is believed that at the time of turbulent changes occurring in the economic environment, organizations are in need of leaders – heads in the first place instead of supervising directors – managers per se. Bennis and Nanus believe the leadership to be a key power in an organization, as it is responsible for creating a new vision whose delivery is supposed to be inspiring and motivating the members of an

organization. (Bennis & Nanus, 1997, p. 2) Academic achievements on management with regard of leadership is immense, which stems from the fact that the problematic aspects of the kind have been preoccupying great thinkers for ages. Questions that had been asked in ancient times, the Middle Ages and the Enlightenment are still valid till today.

The etymology of the terms “leading” and “leadership” stems from an old English word “lithan” which means “go”. The word “lead” derives from Anglo-Saxon word denoting a way, a course, knowledge of next steps, thus leadership implies demarcating directions and taking a certain path of action. (Supernat, 2005, p. 308) The notion is hard to define, it’s “a people-centered skill essential in almost every situation in which two or more people have the intention to deliver a

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specific task". (Loeb & Kindel, 2008, p. 19) Leadership has been defined as a "process of influencing people" for a long time (Blanchard, 2007, p. 14), emphasizing that the word may be mentioned in each case of someone having an effect on someone else with the aim of achieving the established target. Although, the definitions of leadership undergo constant modifications, since more emphasis is put on the statement that leadership does not target at accomplishing specific goals, but is a challenge triggered and posed in front of managing directors, the concept of which should elicit enthusiasm in people as well as exploit their potential minding the benefits for the organization at the same time. The analysis of the definition implies that leadership is a process, which leads up to achieving group goals by exploiting tools of social influence and motivates the group to deliver these goals and also affects the organizational culture. Other definitions concentrate on the characteristics of leadership understood as the characteristics attributed to those entities, which are perceived as leaders. In the most recent concepts leadership is treated as a communication process by which the objectives of the organization are being delivered. In this context, the success of a leader is synonymous with the work of the whole team for the good of the organization. (Wojcik & Wojcik-Czarnecka, 2009, p. 18)

As a result of great interest in leadership, there are many classifications of the concept in the teachings about organizations and management. The author will differentiate between classic and contemporary theories for the purposes of the paper hereby. One should indicate the following classical theories: theories based on traits, behavioral theories of leadership and situational theories (Stoner & Wankel, 1997) (Robbins, 1998) (Steinmann & Schreyogg, 1998) (Griffin, 2001). By contrast, the contemporary theories should bring into attention the following: natural emotional leadership, level 5 leadership, Intelligence Leadership, transformational leadership and Authentic Leadership (Griffin, 2001) (Goleman, Boyatzis, & McKee, *Naturalne przywództwo*, 2002) (Collins & Porras, 2003) (Goleman, *Inteligencja emocjonalna*, 2007). For the purposes of the dissertation hereby, the author will focus on the assumptions of authentic leadership.

The concept of authentic leadership largely refers

to humanistic psychology. It is worth mentioning that it has the features of an eclectic concept, since it comprehensively and thoroughly combines the elements of the previous leadership theories including transformational leadership assumptions involving positive psychology, ethics and morality at the same time. When it comes to transformational leadership - the authors point to some shortcomings in the assumptions of the theory – namely that the transformational leader is not required ethical behavior. It has been believed for many years now that the main and actually the only objective of corporations is to maximize profit and efficiency which should be incorporated in the leadership. However, it should be assumed that ethical behaviors relate to people and people make business. This, in turn, justifies the need to focus on ethics and morality, especially in terms of leaders who influence the subordinates and the entire organization. It was Friedman who formulated the need of Institutionalism of moral responsibility within the company. (Chryssides & Kaler, 1999)

Bass and Steidlmeier (1999) coined the term of "an authentic transformational leader" by using the behaviors described as "4 i" - idealized influence, individual care for the employee, inspirational motivation, and intellectual stimulation. (Bass, 1990) This authenticity was initially understood in different ways, inter alia as the ability to lead in times of chaos, (Abdullah, 1995) or the ability to build a sustainable organization (George, 2004) and motivate and support the development of subordinates. The authentic leaders are characteristic of influencing the team in a way as to increase the feeling of commitment, dedication and motivating to improve the tasks performed in the organization permanently. (Avolio, Gardner, Walumbwa, Luthans, & May, *Unlocking the mask: a look at the process by which authentic leaders impact follower attitudes and behaviours*, 2004) What the authentic leaders are acknowledged for are high moral standards reflecting both by creating visions of the future, stimulation of conduct and communication devoid of rhetorical tricks and language of persuasion. (Bass, *Winter* 1990, pp. 19–31) The focus on the morality of the leader as one of their basic features is something, which distinguishes the concept from other theories. Ethics and morality of the leader is the central element of this theory. (May, Chan,

Hodges, & Avolio, 2003)

Characteristic features of the authentic leadership's concept are the dimensions that describe behaviors of leaders influencing their authenticity. Luthans and Avolio indicate that these are: transparency, self-awareness, openness to feedback and ethics (morality). (Luthans & Avolio, 2003)

The transparency¹ of leadership has to fulfil mainly a requirement of clarity. Clear leadership states for a behavior which is defined as lucid, straight, and easy to understand and interpret. There is no secrets, no pretending or falsifying the results of taken decisions and intentions lying behind them. Transparency is a way of behaving. Being transparent means that people from the environment can easily recognize person's intentions, they can also understand person's way of thinking and acting and see a coherence between them. Palmer believes that the leader, in any situation and regardless of the context, has to be guided by the consequence and honesty, which are the basis of leadership qualities (Palmer, 2010, pp. 204-205). The next aspect is cohesion of beliefs and actions of a leader (Deering, Dilts, & Russell, 2009).

Self-awareness of a leader is mainly built by the consciousness of his or her own strengths and weaknesses, needs, emotions, values and targets. Self – aware manager is able to enhance a level of his motivation and also efficiently increase effectiveness of his team. Authors of the authentic leadership style distinguished four basic elements that constitutes the self-awareness of a leader: values, emotions, self-cognition and forming own goals (both private and professional) (Avolio, Gardner, & Walumbwa, Authentic Leadership Theory and Practice: Origins, Effects and Development, 2005).

Speaking of openness to feedback, for authentic leader a point of view of other people is very

important, even if it is critical towards his or her own opinion. Moreover, authentic leaders are open to discuss and realistically appraise their actions. The last feature is an ethical approach (morality). There is no shortage of ethical dilemma in manager's profession and the aspect of social responsibility of business is gaining a particular importance. In the context of authentic leadership it is important for a manager to act in accordance with his or her professed values and, what is the most important, these postulated values should be in accordance with his or her actual actions.

2 RESEARCH METHODOLOGY

The aim of presented empirical research was to determine to what extent representatives of top management in Polish enterprises can be considered as authentic leaders. Apart from characteristics of authentic leaders (4 dimensions of authentic leadership), additional factors were included to analysis: seniority on particular post, gender and age. Longer seniority of each manager was treated as a confirmation that both the manager and the company meet each other's expectations. In case of variables age and gender, it was decided to investigate whether, and if so, to what extent these two variables influence on the authentic leadership. The aim of the study was to determine the actual state of using the authentic leadership by Polish managers, so the "ex post facto" research was used. To examine the dimensions of authentic leadership the Authentic Leadership Questionnaire (ALQ) version 0.1 (Avolio, Luthans, & Walumbwa, 2004) was used. It is destined to examine leaders in four dimensions forming authentic leadership style. To enable managers to make a self-assessment of their behavior a five-level scale was used (due to the identification of the occurrence of behavior: 1 means strongly disagree, 3 is a neutral response and 5 stands for behavior that a manager strongly agrees with²).

¹ The phrase transparency comes from English word „transparent” which has two meanings: if the subject or substance is transparent it is possible to see through it. A situation, system or action are transparent when they are easy to understand or recognize. (Sinclair, 1997)

² Five-level scale used in the study is called Likert scale.

This scale is a nominal scale comprising several items. These items are usually short sentences, which characterize certain attitudes towards the object. All Likert scale items are having assigned intensity scales to them, which are ordinal bipolar scales. (Kaczmarczyk, 2002)

Presented studies are partial, they cover only a subset of the general population. Ten number of sample, which is a number of individual elements of the subjected general population, was 62 persons. The author is aware of limited possibility of making inferences with such sample, but it is considered that there are all variables interesting to researcher, so the sample is typologically representative (Kowal, 1998). Due to the problem of reaching the mid-level managers, it was decided to use purposive sampling and the scheme of tracking links designs (link-tracing design), together with the technique of random sampling³.

3 EMPIRICAL VERIFICATION OF THE AUTHENTIC LEADERSHIP STYLE AMONG POLISH MIDDLE MANAGERS

3.1 Characteristic of the sample

Participants constituted a diverse group in respects like age, sex, general work experience and seniority in current company. The first criterion of segmentation of examined population was the respondent's gender. Among 62 respondents there were 39 men (63%) and 23 women (37%).

Respondents were also diversified in case of age. There were five basic age brackets distinguished in respondent's particulars. The first and the smallest age group was formed by two

respondents in age up to 30 years old (3,2%) who have already started their professional career. The second group consists of 18 employees in age between 31 – 40 years old which is 29 % of participants.

The most numerous group includes 20 people between age of 31- 40 years old (32,3% of all respondents). The group of 51- 60 years old was represented by 16 people (25,8%) and the group of more than 60 years old by 6 persons (9,7%). From the point of view of using the authentic leadership style, it was also important to know respondents' length of work experience in the current company. Four time periods were divided. The most numerous group consists of 29 respondents (46.8%) who were employed at a given position from 6-10 years. Second in order was a group of employees working for 5 years - 21 respondents (33.9%). 11 people were employed for 11 to 20 years (17.8%), while the smallest group of employees who have been working for more than 20 years consists of only one person (1.6%).

3.2 The transparency of Polish Middle Managers of own research

Dimension of transparency enables to specify the degree of leaders' openness in interactions with others which is expressed by allowing employees to present their ideas, opinions and thoughts. This area was assessed by analyzing the answers to the four questions of ALQ 0.1..

Table 1 ALQ – Relational Transparency

No	No ALQ	Question/ % Value	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total%
1	4	I openly share my feelings with others	12.9	29.0	9.7	30.6	17.7	100.00
2	8	I let others know who I truly am as a person	0.0	19.4	29.0	32.2	19.4	100.00
3	12	I rarely present a "false" front to others	0.0	6.5	27.4	56.4	9.7	100.00
4	16	I admit my mistakes to others	3.2	25.8	14.6	43.5	12.9	100.00

Source: Author's elaboration

These were the questions numbers: 4, 8, 12, 16.

In a study of transparency a special attention was

³ Link-tracing designs were first described by sociologist James Coleman (1958) in the context of social structures' research often based on informal affiliations,

so hardly perceptible by the researcher. (Coleman, 1958)

paid to these features of a manager which support creating employees' trust. This results in the openness of employees, the actual willingness to engage in team's actions which is mainly a result of desire to share their opinions. Transparent leaders' behaviors show "true self" of a leader in relationships with others

Analysis of the first (ALQ 4) gave a picture of leaders' behavior in the area of expressing their thoughts and feelings to other people. In the subjected group of 62 managers, 41.9% of respondents gave a negative answer⁴. A little bit more of answers were coincided with a positive response (48.3%). A cross-analysis of the question and gender has provided interesting information. It revealed that women have predominantly indicated the positive response (20 women, who are representing 87.0% of subjected women and 32.3% of respondents in total). Only 3 women marked the answer "disagree" (13.0% of women and 4.8% of respondents in total). There was no relation between that statement, age or seniority of respondents.

Another subjected aspect of the test (ALQ 8) associated with the transparency of a leader is his willingness to let others to know him as a "person". According to that, his behavior is clear and lucid. As a result of analysis of the responses to this question, it turned out that the respondents represent different approaches to give others a chance to get to know them.

Although more than half of respondents (32 people, which is 51.6%) answered positively, 12 respondents (19.4%) do not give others that kind of chance. What was surprising, 18 respondents (29.0%) decided to mark an answer "neutral". The cross-analysis of extreme answers and gender showed that among those who let others to get to know them, there are again almost only women (22 positives answers, which is 95.7%⁵ of women and 35.5% of total). The value of Pearson coefficient⁶ confirmed the existence of a linear

relation between these variables. Interestingly, the subjected area does not indicate any relations with age or seniority. Next question was connected with telling untruth about undertaken actions. This issue definitely affects on the transparency of a leader. It turned out that only 4 people (6.5%) opted for a negative response. Again, quite a lot of people did not decide to give a clear answer by choosing the option "neutral". It was a group of 17 respondents (27.4%). Optimistically, 41 people (66.1%) responded positively⁷. Similarly as in the previous question, the majority of women (20, 87.0% women, 31.7% of total) chose a positive response. The value of Pearson coefficient⁸ confirmed the existence of a linear relationship between the variables. Interestingly, the tested area again did not reveal any relations with age or seniority.

Another aspect affecting the transparency of leadership is the ability to admit to own mistakes. The analysis of responses to this question provided information that 18 managers (28.6%) were not able to admit to mistakes which they have made. A cross-analysis of responses to this question, age and work experience has revealed that a negative response was chosen more often by young people⁹, including young people with short work experience on current position.

Simultaneously, value of the Pearson's r coefficient¹⁰, calculated for both variables, confirmed the existence of a linear relationship between the variables.

3.3 Self-awareness of Polish Middle Managers of own research

The dimension of self-awareness enables to determine whether, and if so, to what extent a manager (leader) is aware of his or her strengths, weaknesses and limitations. It also allows to evaluate how a manager (leader) is perceived by others and how he or she can affect on that. Majority of managers who are successful, seek

⁴ Strongly disagree and disagree

⁵ Strongly agree and agree

⁶ This relation was verified by Pearson's r coefficient, which amounted to $r = 0.592$ and is significant on the level of significance $p < 0.01$.

⁷ Strongly agree and agree

⁸ This relation was verified by Pearson's r coefficient,

which amounted to $r = 0.521$ and is significant on the level of significance $p < 0.01$

⁹ Strongly disagree and disagree

¹⁰ This relation was verified by Pearson's r coefficient, which for age amounted to $r = 0.482$ and for seniority 0.566 and is significant on the level of significance $p < 0.01$

honest feedback about their strengths, weaknesses and the way of being perceived by others. Thanks to that they can analyze their managing style and they can improve the way of solving problems, building relationships, gaining

support and achieving expected results. This area was assessed by analyzing the answers to four questions ALQ 0.1. These were the questions numbers: 1, 5, 9 and 13.

Table 2 ALQ – Self-Awareness

No	No ALQ	Question/ % Value	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total%
1	1	I can list my three greatest weaknesses	8	16	9	21	8	100.00
2	5	I can list my three greatest strengths	0	8	16	20	18	100.00
3	9	I seek feedback as a way of understanding who I really am as a person	9	29	3	10	11	100.00
4	13	I accept the feelings I have about myself	0	10	16	22	14	100.00

Source: Author's elaboration

The first question in this category (ALQ 1) was related to the manager's awareness of his or her weaknesses. It turned out that almost half of managers (29 people, 46.8%) answered positively and 9 respondents (14.5%) had no opinion on the subject. As many as 24 people (38.7%) were not able to define their weaknesses. Cross-analysis helped to conclude that mostly it were young people between 31-40 years old (14 people, 77.8% of people in this category, 22.6% in total). The ALQ questionnaire does not allow to point out real causes of this phenomenon. It can be assumed that the level of self-awareness perhaps increases with age and seniority. Answers to questions about strengths (ALQ-5) were shaped differently. Only 8 respondents (12.90%) answered negatively, but surprisingly as many as 16 people (25.8%) indicated a neutral response or had no opinion on the subject. 38 people (61.3%) responded positively. A cross-analysis of the question, age and work experience showed that, as in the case of weaknesses, negative responses were given mainly by young people with little experience on a managerial position. Another issue (ALQ 9) was connected with searching for feedback from people. Thanks to that, the manager can also understand himself.

Unfortunately, the majority of respondents do not use feedback in this way. While assessing this issue, as many as 38 persons (61.3%) indicated a negative response. Only 21 respondents (33.8%) confirms seeking for feedback. A cross-analysis revealed that among those who benefit from the feedback there are mostly women (19, 82.6% women, 30.6% in total). At the same time the value of Pearson coefficient¹¹, calculated for both variables, confirmed the existence of a linear relationship between the variables. The last issue (ALQ 13) was concerned with the level of self-acceptance expressed by the acceptance of feelings towards oneself. Once again, the large number of responses were neutral (16, 25.8%). More than half of respondents (36 people, 58.1%) accept the feelings for themselves. Test procedure enabled to verify the relationship between the level of self-acceptance and awareness of own strengths and weaknesses. The value of Pearson coefficient¹², calculated for both variables, confirmed the existence of a linear relationship between the variables. This means that with manager's increasing awareness of strengths and weaknesses the level of his self-acceptance increases too.

¹¹ This relation was verified by Pearson's r coefficient, which amounted to $r = 0.511$ and is significant on the level of significance $p < 0,01$

¹² This relation was verified by Pearson's r coefficient, which amounted to $r = 0.511$ and is significant on the level of significance $p < 0,01$

3.4 Ethics / morality of Polish Middle Managers of own research

Dimension of ethics / morality of a manager examines the leader's compliance with high ethical and moral standards, which are expressed by his or her behavior. It is believed that ethically

acting managers have to develop their own moral grounds first, just to be able to formulate requirements for subordinates. They should develop a personal philosophy of ethical action. This area is formed by 4 questions - ALQ 2, 6, 10 and 14.

Table 3 ALQ – Internalized Moral Perspective

No	No ALQ	Question/ % Value	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total%
1	2	My actions reflect my core values	8	10	2	20	22	100.0
2	6	I do not allow group pressure to control me	6	11	2	28	15	100.0
3	10	Other people know where I stand on controversial issues	8	10	2	32	10	100.0
4	14	My morals guide what I do as a leader	2	8	4	27	21	100.0

Source: Author's elaboration

The first question (ALQ - 2) examined whether manager's actions reflect his or her core values. It turned out that as many as 18 people (29.0%) replied it negatively. However, it is encouraging that up to 42 people (67.7%) actually act in accordance with their values. The analysis of negative answers did not reveal any relations with variables (gender, age, seniority). Another step was to evaluate how managers behave when they face group pressure (ALQ - 6). The vast majority (43 persons, 69.4%) do not succumb to group pressure and 17 respondents (27.4%) assume that they could change their decision in the case of such situation. A cross-analysis of responses to questions about age and work experience has shown that a negative response¹³ was chosen mainly by young people, including young people who have short work experience on the position. At the same time the value of Pearson's r coefficient¹⁴ confirmed the existence of a linear relationship between the variables. Another question (ALQ - 10) was designed to diagnose whether employees know what is the opinion of their manager on controversial topics. As in the

previously analyzed question, the vast majority of respondents (42 people, 67.7%) answered positively, while 18 (29.0%) responded negatively.

The last question in this category (ALQ - 14) was related to the use of personal moral rules and values in building a role of a leader or manager. 48 managers (78.2%) responded positively, while 10 (16.1%) answered negatively. Interestingly, there is a relationship between the first (ALQ - 2) and the last question (ALQ - 14) in this category. It means that managers who reflect their core values through behavior simultaneously build their leadership role. The value of Pearson's r coefficient¹⁵, calculated for both variables, confirmed the existence of a strong linear relationship between the variables.

3.5 Polish Middle Managers openness to feedback of own research

Another tested area was the area of openness to feedback which indicates the degree in which leader asks subordinates for their opinions before

¹³ Strongly disagree and disagree

¹⁴ This relation was verified by Pearson's r coefficient, which amounted for age $r = 0.419$ and for seniority 0.468 and is significant on the level of significance

$p < 0,01$

¹⁵ This relation was verified by Pearson's r coefficient, which amounted to $r = 0.721$ and is significant on the level of significance $p < 0.01$

making important decisions. This area is formed by 4 questions ALQ: 3, 7, 11 and 15. The first examined issue (ALQ - 3) was concerned whether managers look for opinions of others before making their own decisions. It turned out that 35 managers (56.5%) responded negatively and it means that they do not take that kind of actions. However, 25 respondents (40.3%) indicated that they act in this way. A cross-analysis of this question, age and work experience has provided

interesting information. Young people between 31 and 40 years-11 respondents (representing 61.1% of people in this age group, and 17.7% of the total) and people with low rate of seniority (to 5 years) - 8 persons (38.1% in this period, 12.9% of the total) are more likely to seek information before making a decision. At the same time the value of Pearson's r coefficient¹⁶, calculated for both variables, confirmed the existence of a linear relationship between the variables.

Table 4 ALQ – Balanced Processing

No	No ALQ	Question/ % Value	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total%
1	3	I seek others' opinions before making up my own mind	23	12	2	11	14	100.0
2	7	I listen closely to the ideas of those who disagree I with me	10	4	7	18	23	100.0
3	11	I do not emphasize my own point of view at the I expense of others	0	5	9	28	20	100.0
4	15	I listen very carefully to the ideas of others before I making decisions	14	22	2	15	10	100.0

Source: Author's elaboration

Another examined aspect is connected with listening to employees' opinions, even in situations when they are not consistent with the opinion of the manager. In this regard, there were 41 positive opinions obtained (66.1%). However, 14 managers (22.6%) do not pay attention to this issue. It was also examined whether discussed behavior of managers is connected with emphasizing their beliefs and attitudes regardless of other people. Encouragingly, 48 managers (77.4%) answered that they do not behave in this way. The question number 4 (ALQ - 15), which determines whether managers listen carefully the opinions of others before making a decision, is an extension of the first question (ALQ - 3). In this question, high compliance of responses was obtained. Almost the same number of managers responded positively (25 persons, 40.3%) and negatively (35 people, 56.5%).

the usage of the authentic leadership by Polish managers. Analysis of the raw data allowed to determine the overall level of this phenomenon in different areas (Table 5).

Table 5 ALQ – Dimensions of authentic leadership

ALQ – dimensions	Value
Transparency	13.74
Self-awareness	14.49
Openness to feedback	13.24
Ethics/ Morality	13.14
TOTAL	54.61

Source: Author's elaboration

According to assumptions of the study ALQ version 0.1., the level of authentic leadership (54.61) indicates that Polish managers use a style of authentic leadership in a large extent¹⁷. Optimistically, all of the tested areas revealed a similar level. Taking into account the

4 FINAL REMARKS

Areas described above provide an overview on

¹⁶ This relation was verified by Pearson's r coefficient, which for age amounted to $r = 0,433$ and for seniority $r = 0.411$ and is significant on the level of significance

$p < 0,01$

¹⁷ Very high = 64-80, high = 48-64, low = 32-48, and

fact that the study was conducted only by using a questionnaire 1.0, which is intended to examine leaders, it is important to be aware that the results may have a declarative character. In this context,

it would be important to conduct further researches in this area, which would cover the scope of both managers and their employees.

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very low = 16-32. Scores in the upper ranges indicate stronger authentic leadership, whereas scores in the lower ranges indicate weaker authentic leadership. (Northouse, 2010)

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ACTUAL PROBLEMS OF FINANCIAL CONTROL OF LOCAL GOVERNMENT

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Abstract

Transformation processes in Ukrainian society necessitate addressing important task - the creation of the state of effective financial and budgetary system and effective mechanisms for its further improvement. In the organization of system of financial control in Ukraine there are a number of problems that reduce the level of financial budgetary discipline in the regions. This requires a rethinking of the role of the state in the exercise of financial control in general and local budgets in particular, the concept of external and internal financial control interrelations of structural elements of state control as an integrated system. The paper highlights the main bottlenecks of the state financial control of local government in Ukraine and the basic problems of the current system in Ukraine state financial control, which subsequently lead to inefficient management of the economy and public finances. The study suggested solutions. Based on the priority of the state policy in the context of Ukraine's accession to the EU, we can say that an important aspect of this process is the adaptation of the system of state financial control to EU requirements. There are given some suggestions to improve the effectiveness of the system of financial control activities of local government. Here is highlighted the need to review approaches of creating a modern system of public and financial control in Ukraine, taking into account requirements of European Union and internal features of the state.

Keywords: *state financial control, local governments' internal financial control, external independent control, governance, local budgets, reform, transformation*

1 PROBLEMS OF FINANCIAL CONTROL AT THE REGIONAL AND LOCAL LEVEL

Updating survey of state financial control at the local level is to identify the problem areas of the field and finding ways to address these issues, especially concerning the formation and function of the optimal variant of the system of financial control.

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The system of financial control, which is essential for the economic development of Ukraine shall provide as improving the efficiency of formation of financial resources and their allocation, distribution and use. State financial control is one of the important functions of the government as an instrument of implementation of financial policies, ensures the formation and effective use of financial resources of the state for achieving its objectives in the field of finance. It seeks to identify any deviations from the agreed standards of legality, appropriateness and effectiveness of financial management and property of the state, and in case of such deviations provides timely take appropriate corrective and preventive measures. It

should be noted that from the way the system is built in the country public financial control is largely dependent, on the one hand, the credibility of the state as their own citizens and foreign communities, and on the other - economic growth, the region in general, and economic subjects in particular. The efficiency of public financial control depends on the economic and political well-being of the nation.

However, the system of financial control, built in Ukraine does not provide for an adequate level of fiscal discipline as a whole in the state and regional level in particular. This is due to a number of problems that create growth trends in the number and volume of major financial irregularities. This system operates without the existence of a basic law that establishes the basic concepts in this area, clearly divides tasks, functions and powers between the state and local authorities, governing relations between subjects and objects of control, responsibility and independence determines appropriate law enforcement officials.

The Budget Code of Ukraine (Zakon, Byudzhetnyy kodeks Ukrayiny, 2010) does not resolve these issues. Unsystematic result in the legal field has become unbalanced system of bodies providing public financial control and audit (Hilobok, 2009, p. 122).

Approved the concept of public internal financial control provides a "warped scenario" development that could lead to the continuation of the practice of fraud and financial irregularities, primarily in the public sector. In the government's concept of public internal financial control, local authorities referred to the public sector.

However, the Law of Ukraine "On Local Self-Government" in no way considers the functions and powers of local government in the state sector.

The Law of Ukraine "On Local Self-Government" determined that the state financial control over the activities of agencies and officials of local self-government can only be made on the basis and within the limits and in the manner specified by the Constitution of Ukraine and laws of Ukraine, and should not lead to interference by government or

their officials in the implementation of local self-government granted them their powers. (Zakon, Zakon Ukraini Pro derzhavne regljivannja u sferi komunal'nih poslug, 2011)

At the same time it should also be noted that the Cabinet of Ministers of Ukraine "On organization of local state administrations" provided in the device structure administrations separate entity, which would have relied function of internal financial control. Therefore, the local authorities are not interested in the organization of internal financial control in the region, leading to the existence of ineffective internal controls over the use of local budgets and transfers.

The current model of state financial control must comply with the principle of decentralization. Therefore, it is necessary to build a system based on the development of internal management and control at the regional level. This is the creation of local governments at all levels of the system of internal controls over the use of local budgets and public property and of external control at the regional and local levels (Stefanyuk, 2009, pp. 38-39).

According to current legislation of Ukraine status report fiscal discipline is not defined as part of reporting on the state and local budgets and is not considered by the Verkhovna Rada of Ukraine and the relevant councils. As for the reports on the implementation of local budgets, then they do not prepare conclusions external (independent) audit institution, and consider only committees on Budget respective councils.

Summary results of audited reports, which are sent by the Control and Audit Office Verkhovna Rada of Ukraine and the Ministry of Finance are not approved and it is not accepted by the relevant decision, and only come to the attention of authorities. This indicates a low level of objectivity in the assessment of fiscal discipline in Ukraine and inefficient procedures and mechanism for reporting.

Under the provisions of the Constitution of Ukraine (Article 140) Local government is the right of territorial communities to solve local issues within the laws of Ukraine. Local government is exercised by a territorial community in the manner

prescribed by law, both directly and through local government: village, town and city councils and their executive bodies. Local government in Ukraine - is guaranteed by state law and the actual capacity of the territorial community independently or under the responsibility of authorities and local government officials to address issues of local importance within the Constitution and laws of Ukraine. Articles 142-145 of the Constitution of Ukraine (Konstytutsiya Ukrainy, 2014) and the Law of Ukraine "On Local Self-Government in Ukraine" (2015) clearly defined responsibilities and powers of local government and are in no way related to the public sector. Only a few powers delegated authorities granted by the law to local governments may be regarded as a public authority. With respect to internal control, it should be noted that statutory enough of their own powers of local governments to provide domestic (municipal) control.

At the same time, the Law of Ukraine "On Local Self-Government" states that public oversight bodies and local government officials may be made only on the basis and within the limits and in the manner provided by the Constitution of Ukraine and laws of Ukraine, and should not lead the intervention of public authorities or their officials in the implementation of local self-government granted them their powers.

In addition, the provisions of the Concept of imposing additional powers of the State Control and Revision Office of centralized internal audit and inspection centralized community property (property administrative units) contradict relevant provisions of the Law of Ukraine "On Property". Subjects of community property are administrative units in the face of regional, district, city, town and village councils. Management of such property on behalf of the people carrying out the relevant Council of People's Deputies. The legislation stipulates that the bodies authorized to manage state property monitor the effective use and safekeeping of the property entrusted to them. However, according to the concept central executive authority in the field of audit as the Control and Auditing Service and its territorial units shall be entitled, in fact, from the outside to interfere in the management of municipal property. This put the actions of local governments on public

property, depending on the staff of the Control and Audit Office and led to increased confrontation between the authorities of different levels of government.

It may be reason to say "warped scenario" development embedded in the reform of public financial control, which launched currently in Ukraine. After analyzing the model that laid the basis for reform can predict subsequent risk of negative consequences of its implementation.

First, the maintenance of such a system will require substantial material and financial resources, both from the state and the taxpayer. Second, the combination of two different systems in nature, one of which aims to prevent the violation, and in case of - correct, and the second system is intended to identify the offender and punish him. This polarity approaches lead to deep conflict, both in the control system, and between subject and object controls.

Third, the accumulation of a large number of system types, forms and methods of control as obsolete (command-administrative) and modern, which will result in inefficiency and ineffectiveness of control measures.

The concept of public internal financial control is definitely very important and right step towards the reform of public financial control in Ukraine. It has many advantages in the case of successful realization should bring Ukraine closer to international requirements and standards and to facilitate the adaptation of national legislation with EU law.

Public financial control, as part of financial management falls far short of the reform of intergovernmental fiscal relations. There was a transfer of power in relation to a particular part of the budget resources to local governments, but did not materialize appropriate delegation of authority with respect to liability for poor management. Based on the priority of the state policy in the context of Ukraine's accession to the EU, an important aspect in this process is the adaptation of the system of state financial control to EU requirements. This is a fulfillment of Ukraine requirements of Chapter 28, "Financial Control" document "Acquis communautaire" and the

provisions of the Lima Declaration of Guidelines on control.

Necessary in the context of public administration reform, which started in Ukraine in general change approaches to the concept of "control" and bring it closer to the European interpretation. The monitoring system should be aimed at correcting violations and preventing them in the future. In addition, the system of financial control at the local level should be permanent. To build an effective system of financial control in Ukraine that provides a stable state of fiscal discipline in the region is possible only in the presence of effective internal control system in local authorities at all levels (regions, cities, villages, etc.), that the system of municipal financial control. For this purpose it is necessary to develop and approve in law present an updated model of the system of financial control in Ukraine.

2 FINANCIAL CONTROL IN THE CONTEXT OF THE TRANSFORMATION PROCESSES.

In order to address the shortcomings in the functioning of public financial control system is necessary to effect a change in priorities - from inspection of sanctions for offenses committed in the audit aimed at preventing violations and improving the management of budgetary resources by providing independent and objective advice.

It should be noted that the elimination of existing shortcomings in the functioning of public financial control and its transformation into a modern model with changing priorities and requirements in controlling the system needs reform.

General features of the most optimal and one that would meet the requirements of the EU model of financial control at the local level (municipal financial control) in Ukraine can be:

1. the independent financial control, independent control of the total revenues for all budget and spending of budget funds, including local budgets and transfers shall be made by the Accounting Chamber and its regional offices ;

2. internal financial control, monitoring of the timely and full collection of taxes and duties (mandatory payments) to all budgets - Ministry of Finance, including the State Tax Administration, Customs Service of Ukraine within the ministry as well as other competent authorities power;
3. internal financial control, in terms of control over the use of local budgets and transfers from local budgets, internal control and audit services as part of local authorities (municipal control) and auditors in public institutions, in terms of controlling the use of transfers from the state budget local budgets - authorized representatives (state auditors) the Minister of Finance.

Specific measures to increase the number of inspections at the local level regulatory authorities will not result in a significant improvement of financial and budgetary discipline. In this regard, it is proposed to define the conceptual model on municipal financial control and the stages of its implementation and outline the laws and regulations that provide the legal framework and implement financial and economic analysis of the model.

The authorities must carry out a series of systematic measures that would allow to stabilize fiscal discipline at the local level. In particular, to:

1. develop and adopt a law on financial control and ethics for auditors.
2. prepare amendments to the Budget Code of Ukraine and the Code of Ukraine on Administrative Offences.
3. create an internal audit in the state of local authorities, in this case, to distinguish between the functions of inspection (audit) and audits.
4. take appropriate measures for the implementation of municipal financial control and audit at regional and local level.
5. strengthen the responsibility of managers at all levels of government and clearly establish its limits in the legislation.
6. establish a risk assessment during the state audit and financial management and transparent mechanism for planning of control measures.

7. create conditions at the local level of training and retraining to meet the new qualification requirements and procedures. Implement appropriate education course to prepare public auditors.
8. develop a common reporting form and procedure of state financial control and audit local authorities.
9. statement fiscal discipline at the local level to include in the report on the implementation of the relevant budget.
10. create a single database of state financial control with the ability to use it locally.

It should be noted that the emphasis in modern terms had been made on reforming the system of internal control of the State. This is because the external control of public financial control Ukraine occupies an important place and is the most developed species, characterized by the highest level of centralization and fiscal direction. In contrast to the national system, at the heart of the control system put internal audit and internal control as components of public internal financial control, which allows you to create favorable conditions to avoid financial irregularities in the public sector, more efficient use of budget funds and state property, responsibility and accountability of managers enterprises, institutions and organizations in the public administration.

Today Ukraine is in the first stage of implementation of the European model of public internal state control. However, in recent years, our country has progressed quite significantly in the legislative and methodological adjustment of the national system of public internal financial control. That is why today is safe to say the presence of a coherent normative - legal framework at the state level governing the implementation and operation of public internal financial control in local organs of state and public sector.

The European experience shows that the organization of internal financial control is based on centralized and decentralized models.

When using any - any of the models needed to assess the specificity of public administration and development of public finances. Ukraine has not

yet established a proper legal and methodological support the functioning of decentralized internal audit in public and public sector, as the initial implementation of internal audit in the public sector, we believe that it is feasible to introduce moderately centralized approach. European standards suggest the operation of such a model, even if it is contrary to the ideal decentralized model. In Ukraine, as in some countries in Eastern Europe, dominated by centralized model of public internal financial control elements decentralized - in the previous exercise control. Address major economic problems in public finances depends on power management solutions, financial support, identification and achievement of major objectives and internal control systems as an effective control system should ensure the implementation of state policy in the sphere of land relations. Taking into account the recommendations of the European Community, the initial stage of the internal control system in Ukraine should be formed from moderately centralized model.

3 WAYS TO IMPROVE FINANCIAL CONTROL AT THE REGIONAL LEVEL

After analyzing the system of state financial control at the local level, we can say about the lack of effectiveness of the current system of financial control, including control of local financial authorities. The primary need is to improve legislation on financial control at the local level.

One of the ways of improvement of financial control should be to increase the effectiveness of preventive control on the part of the Treasury, in coordination with the executive power and state tax administration (Bubenko & Butenko, 2008).

However, it is useful to enable local financial authorities also independently control the financial activities of local government, primarily through the establishment of the structure of their financial departments to monitor the collection of local taxes and fees.

It should also improve methods of control procedures, replace outdated methods of retrospective control by modern methods that are

not aimed at detecting violations and prevent them in the future.

All this will improve the activity of control subjects, their interaction will facilitate the coordination of financial control at the local level, and will ensure that local budgets and adherence to fiscal discipline.

Thus, to be formed almost new paradigm of the control system of the state, which should be not only the transformation of forms of control, and

system coordination and control of the transition of control over the use to monitor the effectiveness of the use of public resources shift from the principle of criminal control of preventive and counseling (Basantsov, 2011, p. 13).

This, in turn, promote the rational use of public resources, strengthen fiscal discipline, rapid response to potential hazards that can lead to financial irregularities, and will ensure the efficiency of the fiscal system as a whole.

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MODELS, METHODS AND INFORMATION TECHNOLOGIES OF PROTECTION OF CORPORATE SYSTEMS BASED ON INTELLECTUAL IDENTIFICATION OF THREATS

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Abstract

The article to contain results of the researches, allowing to raise level of protection of the automated and intellectual information systems of the motor transportation enterprises (AISTE) in the conditions of an intensification of transportations. The article also considers the issues of research and protection of the AISTE under the condition of several conflict data request threads. The system approach to solving problems of information security, proposed in this work provides for the integration of mathematical models of the processing and protection of information. This model connects invulnerability and flexibility for each of three aspects of security (confidentiality, availability and integrity) of information based on structural unification of these contradictions. In article results of researches on development of methods and models of intellectual recognition of threats to information systems of transport. The article to contain mathematical models and results of an estimation information systems having Internet connection through various communication channels.

Keywords: Protection of information, data processing system, security policy, mathematical models

1 INTRODUCTION

The influence of information automation systems pervades many aspects of everyday life in most parts of the world. In the shape of factory and process control systems, they enable high

productivity in industrial production, transport systems they provide the backbone of technical civilization. One of the foremost transport businesses security concerns is the protection of critical information, both within their internal financial infrastructures and from external elements. Now more and more open and standardized Internet technologies (e-business, e-logistics, e-cargo etc.) are used for that purpose.

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The focus on cyber security is increasing rapidly due to many high profile and highly disruptive/damaging security breaches threatening financial and physical damage across critical national and corporate infrastructures. It also appears the nature of the threat is changing (Ahmad, Dubrovskiy, & Flinn, 2005).

The automated systems on transport vary in technologies applied, from basic management systems such as car navigation; traffic signal control systems; container management systems; variable message signs; automatic number plate recognition or speed cameras to monitor applications, such as security CCTV systems; and to more advanced applications that integrate live data and feedback from a number of other sources, such as parking guidance and information systems; weather information; and the like.

A Transportation Management System (TMS) of "Ukrzaliznytsia" (The State Administration of Railway Transport of Ukraine) is a software system designed to manage transportation operations. TMS are one of the systems managing the supply chain. They belong to a sub-group called Supply chain execution (SCE). TMS, whether it is part of an Enterprise Level ERP System and has become a critical part of any (SCE).

The modern approach to ensure the reliability of information processes (IP) and its protection from unauthorized access (UA) is supported at the international level by standard ISO/IEC 15408 (ISO/IEC 15408-1:2009, 2009). According to this approach, a reliable IP successfully counteracts to the specified threats of security at the given external conditions of its operation. This leads to

continuous improvement as ways and means of information protection (MIP) as well as ways and means of implementation of threats to information security (IS), resulting that appearance of new MIP leads to its bypassing by means of attack (Trivedi, Kim, & Arpan, 2001).

The purpose of the article - description of the method and models of recognition of information security threats, which, unlike the existing permit to take a final decision on the existence of a threat to existing and new classes of attacks against information systems (Chi, Park, Jung, & Lee, 2001).

2 PREVIOUS RESEARCHES

To evaluate security of such a system, a security analyst needs to take into account the effects of interactions of local vulnerabilities and find global vulnerabilities introduced by interactions. This requires an appropriate modeling of the system. Important information such as the connectivity of elements in the system and security related attributes of each element need to be modeled so that analysis can be performed. Analysis of security vulnerabilities, the most likely attack path, probability of attack at various elements in the system, an overall security metric etc. is useful in improving the overall security and robustness of the system. Various aspects which need to be considered while deciding on an appropriate model for representation and analysis are: ease of modeling, scalability of computation, and utility of the performed analysis. The analysis of the protection of information systems and automated control systems for transport companies has yielded the following results (period 2012 -2014), fig. 1, 2 (Kolodgy, 2014).

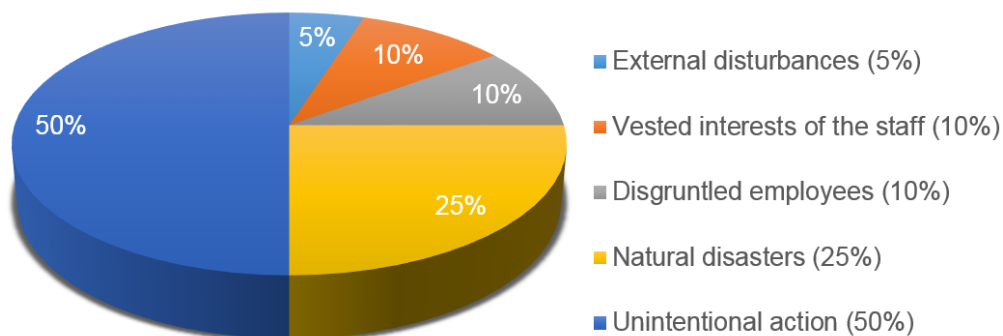


Fig 1. The distribution of sources breach AIS

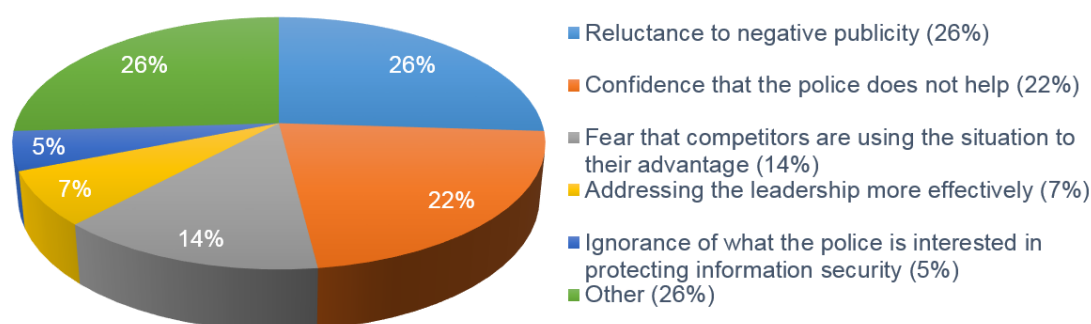


Fig. 2. The reasons for silence with information security incidents

The analysis of the threat to an automated information system must include an analysis of the vulnerabilities associated with the system environment. The goal of this step is to develop a list of system vulnerabilities (flaws or weaknesses) that could be exploited by the potential threat-sources. Vulnerability (Mirkovic, Dietrich, Dittrich,

& Reiher, 2004), (Chi, Park, Jung, & Lee, 2001): A flaw or weakness in system security procedures, design, implementation, or internal controls that could be exercised (accidentally triggered or intentionally exploited) and result in a security breach or a violation of the system's security policy.

3 MODELS, METHODS AND INFORMATION TECHNOLOGIES OF PROTECTION OF CORPORATE SYSTEMS OF TRANSPORT BASED ON INTELLECTUAL IDENTIFICATION OF THREATS

The main task of discrete recognition and vulnerability search procedures (DRVSP) building is search of informative sub descriptions (or description fragments) of objects (Lahno & Petrov, 2011).

We consider informative objects to be the objects that reflect certain regularities in description of objects used for training, that is presence or, vice versa, absence of these fragments in the object, which is being considered, allows attributing it to one of classes. The fragments that are met in descriptions of one-class objects and cannot be met in descriptions of other classes' objects are considered to informative in DRVSP. The regarded fragments as a rule have a substantial description in terms of designing information safety systems (ISS).

An elementary classifier is understood as a fragment in a description of a training sample. A certain multitude of elementary classifiers with preset properties are built for each $\{KL_1, \dots, KL_r\}$

class. Each of such objects is not "typical" for its class, as it resembles to descriptions of objects belonging to other classes. Presence of untypical objects extends the length of fragments used to distinguish objects belonging to different classes. Long fragments are less frequent in new object, thus extending the number of unrecognized objects.

The necessity of building effective realizations for discrete recognition and vulnerability search procedures is directly connected to problems of metric (quantitative) characters of informative fragments' multitudes. The most important and technically complex are the problems of obtaining asymptotical estimates for typical number values of (impasse) covering and the length of integer matrix (impasse) covering and also the problems of obtaining analogical estimates for permissible and maximum conjunctions of a logical function, which are used for synthesis of circuit hardware-based ISS solutions.

There is, as a rule, no reliable information about the structure of PA (PA - the number of possible targets offender) multitude available while solving tasks connected with projecting an effective AIS (AIS - Automated and intellectual information systems) information safety system, that's why having built a discrete recognition and vulnerability search procedures algorithm we cannot guarantee its high performance on new objects different from

$\{sp_{a1}, \dots, sp_{am}\}$. Nevertheless, if the training samples are quite typical for the considered multitude of objects, than the algorithm that makes infrequent mistakes in studies will show acceptable results with unknown (not included in training samples) objects also. In this connection, correctness of discerning algorithm is the problem that should be paid great attention. The algorithm is considered to be correct if it discerns all the training samples correctly.

The simplest example of a correct algorithm is the following: the considered object sp_{an} is compared to descriptions of every training sample $\{sp_{a1}, \dots, sp_{am}\}$. In case if the sp_{an} object's description coincides with a description of a sp_{ai} training sample, the sp_{an} object is attributed to the same class as the sp_{ai} object. In other case the algorithm declines to recognize the object. There is no difficulty noticing that though the foregoing algorithm is correct, it is not able to discern any object which description does not coincide with description of any training sample.

It's obvious that requirement of full coincidence in descriptions of a considered object and one of the training samples is too cautious. The analysis of informational attack varieties and types of unauthorized access to informational system resources shows that the problem of sp_{ai} objects' proximity and their class membership can be solved basing on comparison of a multitude of their sub descriptions. This brings up a problem of choosing character subsets that would generate the sub descriptions, according to which the objects should be compared. A variant of solution for such a problem is used in an of estimation algorithm (EA) model.

Let's introduce the following symbols. Let NP_{pa} stand for a set of $r_{pa}, r_{pa} \leq MI$ different integer-valued characters of $\{p_{aj1}, \dots, p_{ajr}\}$ kind. Proximity of $sp'_a = (\alpha p'_{a1}, \alpha p'_{a2}, \dots, \alpha p'_{aMI})$ and $sp''_a = (\alpha p''_{a1}, \alpha p''_{a2}, \dots, \alpha p''_{aMI})$ belonging to

PA by the NP_{pa} set of characters we will estimate by the following value

$$BN(sp'_a, sp''_a, NP_{pa}) = \begin{cases} 1, & \text{if } \alpha p'_{ja} = \alpha p''_{ja}, \\ 0 & \text{otherwise.} \end{cases} \quad (1)$$

Thus, the schematic circuit of estimation algorithm building for information safety systems is the following. The whole range of different $NP_{pa} = \{p_{aj1}, \dots, p_{ajr}\}, r_{pa} \leq MI$ type sub multitudes is picked out inside the $\{p_{a1}, \dots, p_{aMI}\}$ character system. Later the picked sub multitudes are named reference multitudes of the algorithm, and their whole range is designated by ΩMI .

Further let us set the following parameters:

- $po_{sp_{ai}}$ is a parameter characterizing significance of a $sp_{ai}, i=1, 2, \dots, PA$ target (object);
- $po_{NP_{pa}}$ is a parameter characterizing significance of an object belonging to a reference multitude $NP_{pa} \in \Omega MI$.

Further comes the estimation procedure. The considered object sp_{an} is compared to every training sample sp_{ai} of every reference multitude.

A $\Gamma(sp_a, KL)$ estimation of sp_a object belonging to KL class is calculated for each vulnerability class of AIS $KL, KL \in \{KL_1, \dots, KL_l\}$ in the following way:

$$\Gamma(sp_a, KL) = \frac{1}{|LW_{KL}|} \sum_{sp_{ai} \in KL} \sum_{NP_{pa} \in \Omega MI} po_{sp_{ai}} \cdot po_{NP_{pa}} \cdot BN, \quad (2)$$

where $|LW_{KL}| = |KL \cap \{sp_{a1}, \dots, sp_{aMI}\}|$.

The sp_{an} object is attributed to the class that has the highest estimate. In case if there are several classes with the highest estimate, discerning fails. Obviously the ready-built algorithm is not always correct. Correctness of this algorithm requires

compliance with a linear inequalities system of the following type:

$$\begin{aligned} \Gamma(sp_{a1}, KL_1) &> \Gamma(sp_{a1}, KL_2), \\ \Gamma(sp_{aMI_1}, KL_1) &> \Gamma(sp_{aMI_1}, KL_2), \\ \Gamma(sp_{aMI_{i+1}}, KL_2) &> \Gamma(sp_{aMI_{i+1}}, KL_1). \\ &\dots \\ \Gamma(sp_{aMI}, KL_2) &> \Gamma(sp_{aMI}, KL_1). \end{aligned}$$

The solution of the system comes up to choice of $po_{sp_{ai}}$ $i = 1, 2, \dots, PA$, and $po_{NP_{pa}}$, $NP_{pa} \in \Omega MI$ parameters. In case if the system is not combined, its maximum combined subsystem should be found and the solution of this subsystem defines the parameter points for $po_{sp_{ai}}$ and $po_{NP_{pa}}$.

Another way of assuring the algorithm correctness is choosing a "good" system of reference multitudes. This means, that the system should be chosen in a way assuring that each $sp'_a \notin KL$ training sample meets the $\Gamma(sp'_a, KL) = 0$ condition and each $sp''_a \in KL$ training sample meets the condition of $\Gamma(sp''_a, KL) > 0$. This can be achieved in the following way.

If $NP_{pa} = \{p_{aj}, \dots, p_{am}\}$ is a reference multitude, than the NP_{pa} character set should be named a test, in case if the $BN(sp'_a, sp''_a, NP_{pa}) = 0$ equation is valid for all sp'_a, sp''_a , training objects belonging to different classes. In other words, a test is a number of characters which allows discerning any two objects of different classes.

It is appropriate to mention here that presently the most aggressive way of checking an AIS information protection system effectiveness for unauthorized access is a penetration test. While doing such check, a test applies every possible way of bypassing the mechanisms of AIS protection, which can be used by transgressors of safety policy. Results of penetration tests are analyzed, allowing to raise effectiveness of the information protection system and also to eliminate all the vulnerabilities that were found. Carrying out penetration tests is one of the most

important procedures for raising general information safety of an enterprise or corporation in the countries of European Union or the USA. The penetration test model is regulated, in a number of states, by the organs responsible for licensing and attesting in the sphere of information protection.

Let ΩMI_T stand for some range of tests. If the range of reference multitudes for the algorithm consists of tests, then it's obvious, that such algorithm is correct in all cases when the $po_{sp_{ai}}$ where $i = 1, 2, \dots, PA$, and $po_{NP_{pa}}$, $NP_{pa} \in \Omega MI$ parameters have positive values.

If the NP_{pa_1} character set is a test, then any NP_{pa_2} character set corresponding to $NP_{pa_1} \subset NP_{pa_2}$ is also a test. At the same time, if the objects are close in NP_{pa_2} , they would be close in NP_{pa_1} also. If the objects are close in NP_{pa_1} set of columns, they will always be close in NP_{pa_2} . The shorter tests are more informative in this respect and it's reasonable to restrict the test length (that is character sets) or to build terminal tests.

The NP_{pa} character set can be named a terminal test in case if it meets the following two conditions:

1. NP_{pa} is a test (it is a set of characters, that allows to reveal vulnerabilities of a system);
2. any own sub multitude of the NP_{pa} set is not a test itself.

In other words, a terminal test is an unshortenable set of characters, which discerns any two training samples belonging to different classes of information safety threats $B_{pa,k1}, B_{pa,k2}$.

Let each p_{axj} , $j = 1, 2, \dots, n$ character have a terminal PA multitude of legitimate values.

Let $NP_{pa} = \{p_{axj_1}, \dots, p_{axj_r}\}$ stand for some character set, and let $sp_a = (ap_{a1}, ap_{a2}, \dots, ap_{an})$ be an object of a training sample. Let's designate

the $(\alpha p_{aj1}, \dots, \alpha p_{ajr})$ fragment in the object's description by (sp_a, NP_{pa}) .

Each NP_{pa} test causes numerous description fragments of the following type (sp_{ai}, NP_{pa}) , $i=1,2,\dots,PA$, where sp_{ai} is a training sample, though each of these fragments is met in only class, and is not met in other classes. Thus, if we turn from consideration of reference multitudes to analysis of objects' fragments description, while building algorithms of discrete recognition and vulnerability search procedures; we will be able to build less cautious, but at the same time more correct procedures.

Let NP_{pa} be a certain set of r_{pa} different characters of $NP_{pa} = \{p_{ax_{j1}}, \dots, p_{ax_{jr}}\}$ type, $\sigma_{DOP} = (\sigma_{DOP_1}, \dots, \sigma_{DOP_r})$, σ_{DOP_i} is a legitimate value of p_{ax_i} , $i=1,2,\dots,r_{pa}$ character. The σ_{DOP_i} set is an elementary classifier, caused by characters from NP_{pa} . Proximity of the $sp_{an} = (\alpha p_{a1}, \alpha p_{a2}, \dots, \alpha p_{aMI})$ object of PA and the $\sigma_{DOP} = (\sigma_{DOP_1}, \dots, \sigma_{DOP_r})$ elementary classifier, caused by a set of characters from NP_{pa} should be estimated by the following value:

$$BN(\sigma_{DOP}, sp_a, NP_{pa}) = \begin{cases} 1, & \text{if } \alpha p_{ji} = \sigma_{DOP_{ii}} \\ 0 & \text{otherwise.} \end{cases} \quad (3)$$

A multitude of all elementary classifiers, caused by character sets from $\{p_{ax1}, \dots, p_{axn}\}$, should be designated by MC . Thus, $MC = \{(\sigma_{DOP}, NP_{pa})\}$,

where $NP_{pa} \subseteq \{p_{ax1}, \dots, p_{axn}\}$, $NP_{pa} = \{p_{ax_{j1}}, \dots, p_{ax_{jr}}\}$, $\sigma_{DOP} = (\sigma_{DOP_1}, \dots, \sigma_{DOP_r})$, $\sigma_{DOP_i} \in NP_{pa}$, $npu \ i=1,2,\dots,r_{pa}$.

Each AL algorithm of information threat recognition builds a certain $MC^{AL}(KL)$

submultitude of MC multitude for each KL , $KL \in \{KL_1, \dots, KL_l\}$ class.

Let's designate

$$MC^{AL} = \bigcup_{j=1}^l MC^{AL}(KL_j).$$

Discerning of a sp_{an} object is carried out on the basis of calculating $BN(\sigma_{DOP}, sp_a, NP_{pa})$ value for each (σ_{DOP}, NP_{pa}) element of the $MC^{AL}(KL)$, $KL \in \{KL_1, \dots, KL_l\}$ multitude. That means that the procedure of $\Gamma(sp_a, KL)$ value estimation of sp_a object's belonging to KL class is carried out for each element of the multitude. Thus, each discerning AL algorithm of the regarded family is determined by a $MC^{AL}(KL)$ multitude of elementary classifiers and by the $\Gamma(sp_a, KL)$ way of value estimation.

Generally, a $\sigma_{DOP} = (\sigma_{DOP_1}, \dots, \sigma_{DOP_r})$ elementary classifier, caused by characters of NP_{pa} , can have one of the following three properties:

1. each fragment of (sp'_a, NP_{pa}) , type, where $sp'_a \in KL$, coincides with $\sigma_{DOP} = (\sigma_{DOP_1}, \dots, \sigma_{DOP_r})$;
2. only some fragments of (sp'_a, NP_{pa}) type, where $sp'_a \in KL$, coincides with $\sigma_{DOP} = (\sigma_{DOP_1}, \dots, \sigma_{DOP_r})$;
3. neither of (sp'_a, NP_{pa}) type fragments, where $sp'_a \in KL$, coincides with $\sigma_{DOP} = (\sigma_{DOP_1}, \dots, \sigma_{DOP_r})$.

The first situation is rather uncommon and meets seldom, that is why working with character value sets, which meet the first characteristic, is considered to be impossible. Considerable difference in self-descriptiveness of the following two features consists in the fact that the second

feature characterizes only a training samples sub multitude of KL , and the third feature characterizes all the KL objects. Therefore, in case, when it's important to regard the KL class separately from other classes, there automatically comes a conclusion that the character sets, which comply with the third feature, are more informative. In the stated case it's more natural to consider the situation, when the set of character value is not present in all objects of KL class and is not also present in the sp_a object, as an argument for referring the discerned sp_a object to KL class.

The methods of building elementary classifiers σ_{DOP_i} for KL class in classic models is based on building a σ_{DOP_i} matrix covering, created by training samples' descriptions of each KL class. Usage of such models [7] allows to reduce the calculation expenditure in case if $|KL| < |\overline{KL}|$, for example when there is a large number of information threat classes – $\{KL_1, \dots, KL_l\}$ and $\{B_{pa1}, \dots, B_{pal}\}$

We suggest using the method of typical sp_a objects isolation basing on the procedure of sliding control, which is the following.

One sp_{a_i} , $i \in \{1, 2, \dots, PA\}$ object should be excluded from the training samples. A discerning algorithm is built for the rest of the $\{sp_{a_1}, \dots, sp_{a_{PA}}\} \setminus sp_{a_i}$ samples. Later this algorithm is used for discerning the sp_a object. The sp_a object should be considered typical for its class, if the algorithm refers it to another class or declined recognizing it. The described procedure should be repeated for all the training sample objects.

Let the training samples be divided into basic and control subsamples. A multitude of representative sets should be built for the basic subsamples. Later some weight, which is calculated with the help of the control subsamples, should be compared for each representative set.

Let $p\omega$ stand for the representative set of the KL , $KL \in \{KL_1, \dots, KL_l\}$ class, caused by the (sp'_a, NP_{pa}) pair, where sp'_a is an object of the

basic samples. And let $\delta n(KL, p\omega)$ be the number of sp_{a_i} objects (which are the malefactor's targets) in the control samples, for which the representative set "votes correctly", while $\delta n(\overline{KL}, p\omega)$ is the number of the control samples objects, for which the representative set "votes incorrectly". Then the following functions can be regarded as functions of the $vop_{(sp'_a, NP_{pa})}$ elementary classifier's significance:

$$\begin{aligned} vop_1(sp'_a, NP_{pa}) &= \delta n(KL, p\omega), \\ vop_2(sp'_a, NP_{pa}) &= \frac{1 + \delta n(KL, p\omega)}{1 - \delta n(\overline{KL}, p\omega)}. \end{aligned} \quad (4)$$

The sp_{a_i} object's belonging to KL class will be estimated by the following value:

$$\Gamma(sp_a, KL) = \frac{1}{|MC^{AL}(KL)|} \cdot \sum_{(sp'_a, NP_{pa}) \in MC^{AL}(KL)} vop_{(sp'_a, NP_{pa})} \cdot (1 - BN). \quad (5)$$

We will consider the following value as an informative significance of the p_{axj} character

$$IZ_{p_{axj}} = \frac{\sum_{(sp'_a, NP_{pa}) \in MC^{AL}(KL)} vop_{(sp'_a, NP_{pa})}}{\sum_{\substack{(sp'_a, NP_{pa}) \in MC^{AL}(KL) \\ p_{axj} \in NP_{pa}}} vop_{(sp'_a, NP_{pa})}}. \quad (6)$$

This part of the work sets forth the basic principles of discrete recognition and vulnerability search procedures construction, using the apparatus of logic functions that allows bringing to practice effective circuit solutions of information protection for automatic systems.

Let's regard the situation, when the objects of the considered PA multitude are described by the characters, each possessing values of the $\{0, 1, \dots, k_{pa} - 1\}$ multitude.

Let's associate the (σ_{DOP}, NP_{pa}) elementary classifier, where $\sigma_{DOP} = (\sigma_{DOP_1}, \dots, \sigma_{DOP_r})$,

NP_{pa} is a set of characters numbered $j_1, \dots, j_{r_{pa}}$, with an elementary conjunction

$$\mathfrak{R} = P_{axj_1}^{\sigma_{DOP_1}} \dots P_{axj_{r_{pa}}}^{\sigma_{DOP_{r_{pa}}}}$$

If $sp_a = (\alpha p_{a1}, \dots, \alpha p_{aMI})$ is an object of the PA multitude, then obviously $BN(\sigma_{DOP}, sp_a, NP_{pa}) = 1$ only in case when $(\alpha p_{a1}, \dots, \alpha p_{aMI}) \in NI_{\mathfrak{R}}$,

where $NI_{\mathfrak{R}}$ is a truth interval for the elementary conjunction \mathfrak{R} .

Let's show that building a multitude of $(KL_l) = (B_{pa_l})$ class elementary classifiers for the models previously considered in the article adds up to finding permissible and maximum conjunctions of the characteristic $(KL_l) = (B_{pa_l})$ class function, which is a double-valued logical function possessing different values for training samples of KL_l and $\overline{KL_l}$.

Table 1. The knowledge base for the intelligent recognition of threats to information systems

Attributes (Signs Class threats)	Signs Class threats	The importance of sign	The universum	Terms for the linguistic evaluation ϕ_u, \dots, ϕ_v
The set of classes of information security threats $KL = \{KL_1, \dots, KL_n\}$, The set targets for attack $PA = \{PA_1, \dots, PA_z\}$, The set of information security $N_j^{pa} = \{n_1^{pa}, \dots, n_j^{pa}\}$, The mathematical sets of possible attackers $U = \{u_1, \dots, u_g\}$, The sets of incidents $NIS = \{nis_1, \dots, nis_f\}$, The sets of variants attack on the system $AT = \{AT_1, \dots, AT_q\}$, and others.	$p_{ax} = \{p_{ax1}, \dots, p_{axm}\}$.	based on NIS $-1 \leq IZ_{P_{axj}} \leq 1$	$[0, N_a]$ or $[0, 1]$, c. u.	Critical and uncritical or Identified, partially identified threats, undiag-nosed
The state systems (AIS) $S_{IK} = \{S_{IK_1}, \dots, S_{IK_m}\}$				
Methods and means of protection of information systems $D_{33i} = \{D_{33i_1}, \dots, D_{33i_r}\}$				
The rules for result output $IF (KL_1 \vee \dots \vee KL_n \vee S_{IK_j} \vee \dots \vee S_{IK_m}) THEN D_{33i}$ and $\mu^{d_j}(S_{IK_i}) = \bigvee_{p=1}^{h_j} [\mu^{y_1}(y_1) \wedge \dots \wedge \mu^{\phi_u}(\phi_u)]$, $p = \overline{1, h_j}$, $j = \overline{1, MI}$, де $\mu^{y_1}(y_1), \dots, \mu^{\phi_u}(\phi_u), \mu^{\phi_v}(\phi_v)$ – membership function $y_1, \phi_u, \dots, \phi_v$ of the fuzzy variables to terms; y_1 – the state of information security {below critical, critical, above the critical, high}; \vee – logical OR , \wedge - Logical AND as operations max and min, respectively.				

For example, a system of logical equations for intelligent recognition of DDoS-attacks Application

layer ("slow" HTTP GET flood and "slow" HTTP POST flood), we can write this:

$$\mu^{d_j}(S) = \bigvee_{p=1}^{h_j} [\mu^{y_1^{j,p}}(y_1) \wedge \mu^{\phi_{13}^{j,p}}(\phi_{13}) \wedge \mu^{\phi_{14}^{j,p}}(\phi_{14})],$$

$$p = \overline{1}, h_j, j = \overline{1}, M, \quad (7)$$

where $\mu^{y_1^{j,p}}(y_1)$, $\mu^{\phi_{13}^{j,p}}(\phi_{13})$, $\mu^{\phi_{14}^{j,p}}(\phi_{14})$ – membership function variables y_1 , ϕ_{13} , ϕ_{14} their fuzzy terms $y_1^{j,p}$, $\phi_{13}^{j,p}$, $\phi_{14}^{j,p}$, respectively;

S – the state protection of information systems against DoS / DDoS (Xiang, Zhou, & Chowdhury, 2004);

y_1 – the state of information {below the critical (*bc*), critical (*cr*), above the critical (*ac*), high (*h*) (Lahno & Petrov, 2010);

\vee – logical OR, \wedge – logical AND, like max and min, respectively.

The main objective is to search DRVSP building fragments describing objects, see. Table 1.

The probability of detection of various attacks on the IP is based on Bayes' theorem and the knowledge base (see. table 1). As an evaluation criterion, used parameter changes in the state system (see. Equation 7).

Bayes' theorem is stated mathematically as the following equation (Daston, 1988):

$$P(A|B) = \frac{P(B|A)P(A)}{P(B)},$$

where A and B are events:

- A - The threats: identified, partially identified, undiagnosed;
- B - A change in the system state - $S_{IK} = \{S_{IK_1}, \dots, S_{IK_m}\}$;

$P(A)$ and $P(B)$ are the probabilities of A and B independent of each other.

$P(A|B)$, a conditional probability, is the probability of A given that B is true.

$P(B|A)$, is the probability of B given that A is true.

Fig. 3 shows the main results obtained during the test simulation recognition DoS / Ddos attacks.

According to the results of the experiment, the DRVSP DoS/DDoS - attacks, following results were obtained for the errors of the first kind (false positives) - 10.2% for the error of the second kind (the number of detected attacks) - 2.9%.

Thus, building a multitude of elementary classifiers for the simulated class of information treats adds up to the following:

1. specifying a characteristic function;
2. building a disjunctive normal form, which realizes this function. The biggest difficulty is building disjunctive normal forms from maximum conjunctions (shortened disjunctive normal forms) of a characteristic function;
3. calculating a permissible (maximum) conjunction \mathfrak{R} , which determines of the object belongs to a certain class of threats (Lahno & Petrov, 2012).
4. For each class, the number of threats to information security signs ranged from 3 to 9. Informational content of a sign can change in the range from -1 to +1. To assess the DRVSP used method of cross-validation. The results of validation of the method DRVSP shown in Fig. 4 -6.

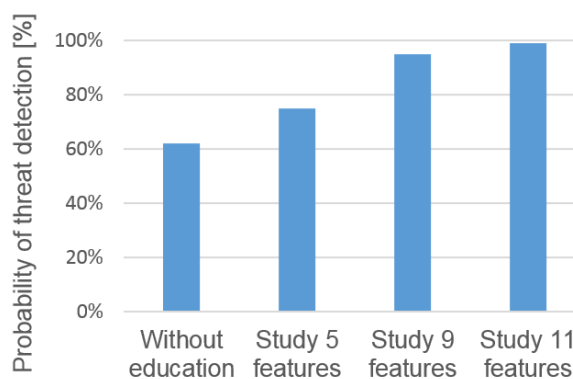


Fig 3. The probability of detecting DDoS attacks

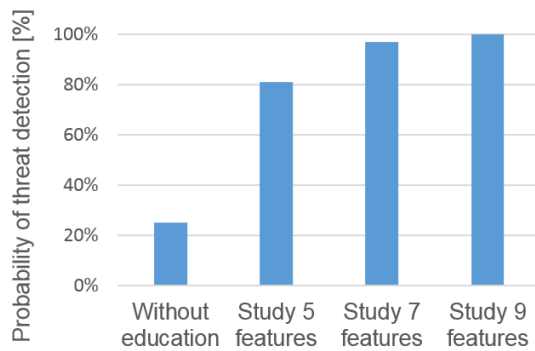


Fig. 4. The probability of recognizing the threat of "Unauthorized access to the user's password"

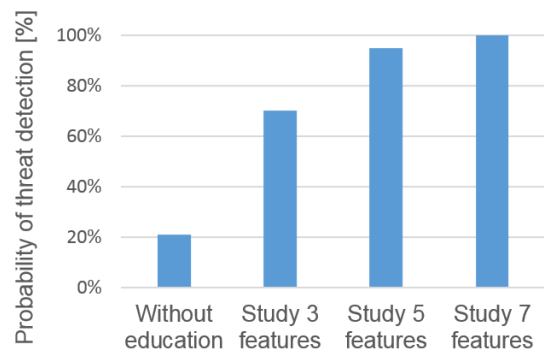


Fig. 6. The probability of recognizing the threat of "Unauthorized access to the navigation system"

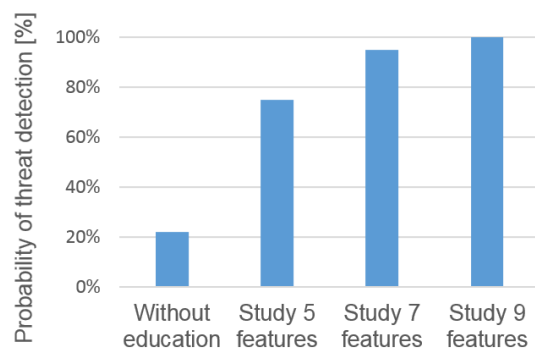


Fig. 5. The probability of recognizing the threat of "Unauthorized access to software and databases"

4 CONCLUSIONS

Operation is devoted to research and development of theoretical methods, models and software products for support of information security on transport.

The method of intellectual recognition of threats based on logic functions and indistinct sets is developed. The method allows increasing efficiency of recognition of threats for information security to 85-98% (depending on a threat class). It is possible, also to use a method for creation of new systems of information security on transport.

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NEW QUASI-STATIONARY THERMODYNAMIC APPROACH IN THE INTERNAL BALLISTICS AND THE INTERNAL COMBUSTION ENGINES

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Abstract

A new principal equation of the internal ballistics is presented herein, which is determining the temperature in the barreled firing weapons and the rocket engines with solid fuel during combustion of the charge. By this new equation it is demonstrated, that during "internal combustion" in the thermodynamic system is not enthalpy imported, but internal energy. On that basis equations, determining the temperature and pressure in the cylindrical space of a piston-type internal combustion engines during the working process, are developed. Equations, determining the average temperature in the chambers of the vane gas turbine engines are also developed. Equation, determining the temperature in the combustion chambers of rocket engines with liquid fuel is also developed. Equations for determining the pressure and temperature in the gas engine of automatic firing weapons as well as collectors of piston engines are also presented.

Keywords: *Internal ballistics, internal combustion engines, rocket engines with liquid fuel*

1 INTRODUCTION

In 1864 A. F. Rezal, a French scientist, had developed an equation, which thermodynamically describes the basic elements of the shot. At that time, the internal combustion engines still have not been invented. However, in 1910 the Russian scientist N. F. Drozdov published the first general methodology, which provides solutions of the internal ballistics' tasks. A little earlier in 1907 was published the first working theory of the internal combustion engines by the Russian Professor V.

I. Grinevetski. By analyzing the theories of internal ballistics and the internal combustion engines of this period it is clear that both of them have nothing in common. This situation remained until the end of World War II and shortly thereafter. With the discovery of the electronic computing machines began the development of differential methods for engineering calculations. Namely one such method is a quasi-stationary thermodynamic process based on the first principle of thermodynamics for open thermodynamic system with fixed and mobile borders (Andiushenko, 1975) (Petrichenko & et al., 1990). A new aspect of the method with regard on the theory of the internal combustion engines will be shown herein, caused by the author's experience to apply the

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terms of the internal ballistics and other aspects, relating to gas turbine engines and rocket engines with liquid fuel (Holshevnikov, K.V; Emin, O.N; Mitrohin, V.T.;, 1986) (Vasiliev, A.P; Kuznecov, V.A; et al., 1993).

2 ANALYSIS

In general, in the presence of inflow and outflows, the equation of the first law of the thermodynamics according to the classical conception (Andiushenko, 1975) (Petrichenko & et al., 1990):

$$dQ + \sum_{j=1}^k i_j dm_j = dU + pdV, \quad (1)$$

where: dQ is the elementary quantity of heat, introduced or lead into the working substance; $\sum_{j=1}^k i_j dm_j$ - the energy flow imported (+) or removed (-) with j - elementary mass of the volume of the thermodynamic system V ; $i = u + pv$ - the specific enthalpy of influent or effluent gases; p - the pressure in the system's volume; dU - the elementary change in the system's internal energy.

In presence of a combustion process inside the thermodynamic system, the imported quantity of heat and produced gases as a result of chemical reaction do not overpass the system, i.e. they do not come from outside. In the case of the produced gases with elementary mass, the ejection energy $-pv$, which is due to an external source and is a component of enthalpy, is not reported. Therefore, the internal combustion leads to a modification only of the internal energy of the system - u . In this case, equation (1) is as follows:

$$dQ + u_g dm_g + \sum_{j=1}^k i_j dm_j = dU + dL, \quad (2)$$

where: $u_g dm_g$ is the internal energy of the gases, produced as a result of the combustion.

The differential equation (2) is the first law of thermodynamics for open thermodynamic system with movable and fixed boundaries and internal source of gases and heat.

The internal ballistics is a science, which mainly represents the theory of thermodynamic and gas

dynamic processes, taking place in the classic barreled and recoilless barreled firing weapons and rocket engines with solid fuel. For the conditions of the internal ballistics from equation (2) is obtained an equation, expressing the rate of

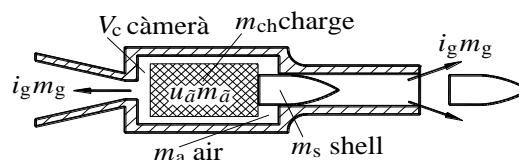


Fig. 1. Scheme and basic parameters of barreled weapon

change of the temperature in the barrel and the approximate scheme, shown in Fig. 1, under the following conditions: The working body has the properties of an ideal gas with the proviso that the co-volume (the volume of molecules) has been taken into account; the processes in which it is involved, are quasi-equilibrium. No restrictions are imposed on the development of the process. For continuously changing are accepted: the pressure p , the temperature T , the volume V .

Equation (2) can be written in the following way:

$$dQ_{ch} + u dm_g - \sum_{j=1}^n i_j dm_j = d(Mu) + pdV + dQ_w, \quad (3)$$

where: m_g is the mass of the gases, produced as a result of the gunpowder's combustion; M - the mass of the working substance in the barrel; u - the specific internal energy of the working substance in the barrel; i_j and m_j - the enthalpy and the mass of influent and effluent gases; p - the pressure of the working substance in the barrel; dV - the change of the space's volume behind the projectile; Q_{ch} - the imported quantity of heat during the combustion of gunpowder; Q_w - the quantity of heat, removed from the working substance as a result of heat exchange.

By taking into account the following relations, equation (3) is transformed: $dQ_{ch} = \bar{Q}_{ch} m_{ch} d\psi$,

where: \bar{Q}_{ch} is the specific heat of combustion of the charge; m_{ch} - the mass of the charge; ψ - the law of heat rejection and gas generation; $u dm_g = c_v T m_{ch} d\psi$, where: $c_v = \frac{R}{k-1}$ is the specific

heat capacity at constant volume; R - the gas constant of the working substance in the barrel; k - the indicator of an adiabatic process. $idm_g = c_p T dm_g$, where: c_p is the specific heat capacity at constant pressure.

Consequently equation (3) obtains the following form:

$$\bar{Q}_{ch} m_{ch} d\psi + c_v T m_{ch} d\psi - c_p T dm_g = Mdu + udM + pdV + dQ_w \quad (4)$$

After dividing of the both sides of the equation on the magnitude - $M c_v T$, and after grouping the following is obtained:

$$(k-1) \frac{\bar{Q}_{ch} m_{ch} d\psi}{MRT} + \frac{m_{ch} d\psi}{M} - k \frac{dm_g}{M} = \frac{dT}{T} + \frac{dM}{M} + (k-1) \frac{pdV}{MRT} + (k-1) \frac{dQ_w}{MRT} \quad (5)$$

Considering that during the combustion of an explosive charge are formed gases in addition to the heat release, then $dM = m_{ch} d\psi + dm_g$ from (5) is obtained

$$\frac{dT}{T} = (k-1) \frac{\bar{Q}_{ch} m_{ch}}{MRT} d\psi - (k-1) \frac{dm_g}{M} - (k-1) \frac{dV}{V} - (k-1) \frac{dQ_w}{MRT}$$

The differential temperature after transformations is finally as follows:

$$dT = (k-1) T \left(\frac{\bar{Q}_{ch} m_{ch}}{MRT} d\psi - \frac{dm_g}{M} - \frac{dV}{V} - \frac{dQ_w}{MRT} \right) \quad (6)$$

The equation (6) gives the relation between the relative changes of the mass of the working substance, the cylinder's volume, the conditions of heat exchange and the relative amount of the introduced heat. It is a differential equation for determining the change in the temperature in the barrel and can be considered as a new basic equation of the internal ballistics.

The current value of the temperature in the barrel is calculated by the equation:

$$T_i = T_{i-1} + (dT)_{i-1} \quad (7)$$

The equation for the state is used to calculate the current value of the pressure.

Due to the great hardness of the differential law of the combustion of the charge $d\psi$ at the start and in the end of the combustion is better for the period

of combustion of the charge to be used the integral form of the basic equation (6), because it comprises the integral law for combustion ψ , and the last one has another nature. After integrating (6), within the burning charge is obtained

$$T_i = T_0 + (k-1) T_{i-1} \left[\frac{\bar{Q}_{ch} m_{ch} \psi_i}{M_i R T_{i-1}} - \frac{m_{effi}}{M_i} - \frac{(V_i - V_0)}{V_i} - \frac{Q_{wi}}{M_i R T_{i-1}} \right] \quad (8)$$

Where: $m_{effi} = \sum_0^i \Delta m_{effi}$ - the effluent gases and

$$Q_{wi} = \sum_0^i \Delta Q_{wi}$$

For determining the current value of the volume is used the equation (Serebriakov, 1962) (Kuveko, A.E; Miropolski; F.P, 1987)

$$V_i = V_c + f x_i - (1-\psi) \frac{m_{ch}}{\rho_{ch}} - \alpha \psi m_{ch}, \quad (9)$$

where: V_c is the volume of the chamber; x_i - the current value of the path of the projectile;

$(1-\psi) \frac{m_{ch}}{\rho_{ch}}$ - the volume, occupied by the unburned

gunpowder; $\alpha \psi m_{ch}$ - the volume of the molecules;

ρ_{ch} - the charge density; ψ - the coefficient of heat and gas release - analogous to the coefficient of active heat release in ICE; α - co-volume (specific volume of the molecules).

If for the conclusion of the basic equation is not used equation (2) but equation (1), i.e. it is accepted that enthalpy is imported during combustion in the thermodynamic system, then equation (4) takes the following form

$$\bar{Q}_{ch} m_{ch} d\psi + c_p T m_{ch} d\psi - c_p T dm_{eff} = M c_v dT + c_v T dM + pdV + dQ_w$$

Analogous transformations were made to afford:

$$dT = (k-1) T \left(\frac{\bar{Q}_{ch} m_{ch}}{MRT} d\psi + \frac{m_{ch}}{M} d\psi - \frac{dm_{eff}}{M} - \frac{dV}{V} - \frac{dQ_w}{MRT} \right) \quad (10)$$

Obviously, the difference between equations (6) and (10) is the second member of the brackets

(10), namely $\frac{m_{ch}}{M} d\psi$. The difference that causes this member in the calculations for the speed of the bullet, pressure and temperature, made under equal other conditions, is a function of the pressure. The difference is 10-15% at a maximum pressure of about 1200 at. and were obtained values, which are greater than the actual and the calculated by equation (6). The dependence of the difference of the pressure is linear and at a maximum pressure of about 2500-3000 at. it exceeds 25%. This proves that in the thermodynamic system during internal combustion is not imported enthalpy, but internal energy. For the piston internal combustion engines, for which in (Petrichenko & et al., 1990) is applied equation (1), with a precondition for submission of enthalpy, in which the maximum pressure rarely exceeds 100at. this difference is in the range of 0.5-1.5% and it is difficult to detect in the general background of thermal, mechanical and other losses.

To describe the process in the channel between the barrel and the gas engine it is considered that the temperature in the connecting channel is different from the temperature in the barrel. In this case, the equation of the first law of thermodynamics for the conditions of the channel is the following:

$$idm_{in} - idm_{eff} = d(Mu) + dQ_w$$

$$dT = (k-1)T \left(\frac{H_u g_c dX}{MRT} - \frac{dV}{V} - \frac{dQ_w}{MRT} \right) + \frac{g_c T dX}{M} \quad (11)$$

where: $idm_{in} = c_p T_b dm_{in}$ is the enthalpy of the gases, which are incoming from the barrel; T_b - the gas temperature in the chamber; $idm_{eff} = c_p T_{chan} dm_{eff}$ - the enthalpy of the effluent gases from the channel; T_{chan} - the temperature of the gases in the channel.

After transformation of equation (11), as shown above, was obtained the equation describing the temperature variation in the accession channel

$$dT_{chan} = \frac{T_{chan}}{M_{chan}} \left[\left(k \frac{T_b}{T_{chan}} - 1 \right) dm_{in} - (k-1) dm_{eff} - \right. \\ \left. - (k-1) \frac{dQ_w}{RT_{chan}} \right] \quad (12)$$

Using the differential form of the equation of the state - $\frac{dp}{p} = \frac{dM}{M} + \frac{dT}{T}$, the differential equation for the pressure in the channel was obtained,

$$dp_{chan} = k \frac{p_{chan}}{M_{chan}} \left[\frac{T_b}{T_{chan}} dm_{in} - dm_{eff} \right] - \\ - (k-1) \frac{dQ_w}{M_{chan} RT_{chan}} \quad (13)$$

For description of the process in the cylinder of the gas engine is considered that the temperature in the cylinder of the gas engine is different from the temperature in the connecting channel. In this case, the equation of the first law of thermodynamics under the conditions of cylinder gas engine will be the following:

$$idm_{in} - idm_{eff} = d(Mu) + pdV + dQ_w \quad (14)$$

where: $idm_{in} = c_p T_{chan} dm_{in}$ is the enthalpy of the incoming from the barrel gases; T_{chan} - the gas temperature in the chamber; $idm_{eff} = c_p T_{ge} dm_{eff}$ - the enthalpy of the effluent gases from the channel; T_{ge} - the temperature of the gases in the cylinder of the gas engine.

After processing of equation (14), as shown above, the equation describing the change in temperature in the cylinder of the gas engine was obtained

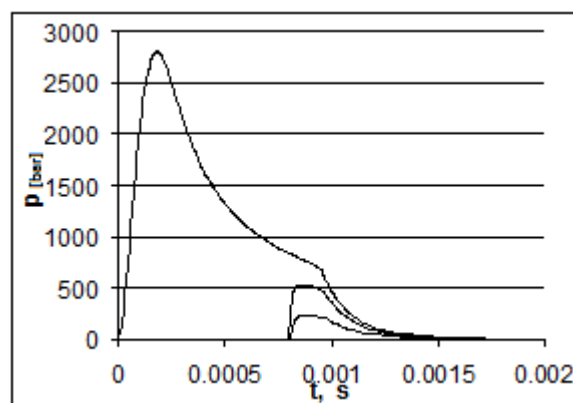


Fig. 2. Pressure variation in the barrel, in the accession channel and in the gas engine of 7,62x39 "Kalashnikov".

$$dT_{ge} = T_{ge} \left[\left(k \frac{T_{chan}}{T_{ge}} - 1 \right) \frac{dm_{in}}{M_{ge}} - (k-1) \frac{dm_{eff}}{M_{ge}} - \right. \\ \left. - (k-1) \frac{dV_{ge}}{V_{ge}} - (k-1) \frac{dQ_w}{M_{ge}RT_{ge}} \right] \quad (15)$$

Using the differential form of the equation for the state $-\frac{dp}{p} + \frac{dV}{V} = \frac{dM}{M} + \frac{dT}{T}$, the differential equation for the pressure in the cylinder of the gas engine was obtained

$$dp_{ge} = p_{ge} \left[k \frac{T_k dm_{in}}{T_{ge} M_{ge}} - k \frac{dm_{eff}}{M_{ge}} - k \frac{dV_{ge}}{V_{ge}} - \right. \\ \left. - (k-1) \frac{dQ_w}{M_{ge}RT_{ge}} \right] \quad (16)$$

Fig.2. shows the pressure variation in the barrel, in the accession channel (middle curve) and the cylinder of the gas engine of "Kalashnikov" with 7,62X39 ammunition. The calculations were made by the expressions (6), (8), (13) and (16) respectively and with detailed mathematical modeling of the thermal and mechanical losses, the after-effect and the gas outflow. The process of leakage is proved with non-stationary gas dynamic model. The difference between the estimated factory value for the maximum pressure is 0,11% and for the speed in the barrel is 3% respectively.

The equations expressing the rate of change of the temperature and pressure in the cylinders of a piston internal combustion engine during the working process (with closed valves) are obtained from the equation (2) and the approximation scheme shown in Fig. 3. Equation (2) takes the following form

$$dQ + u dm_g = d(Mu) + p dV + dQ_w \quad (17)$$

Taking into account the following relations, equation (17) is transformed:

$$dQ = H_u g_c dX,$$

where: H_u is the lower specific heat of combustion of fuel; g_c - the mass of the cycle portion of fuel; X - the coefficient of heat release (of combustion);

$$u dm_g = c_v T g_c dX.$$

Furthermore, the coefficient of mole variation of piston engines is changing in a very narrow range of 1.15 to 1.01, closer to unit, due to air ratio, then the mass variation of the gases during combustion can be ignored, i.e. $dM=0$. In this case, the differential of the temperature of the working process can be determined from (17) and obtains the following form,

$$dT = (k-1)T \left(\frac{H_u g_c dX}{MRT} - \frac{dV}{V} - \frac{dQ_w}{MRT} \right) + \frac{g_c T dX}{M} \quad (18)$$

The differential equation for pressure variation is obtained, using the differential form of the

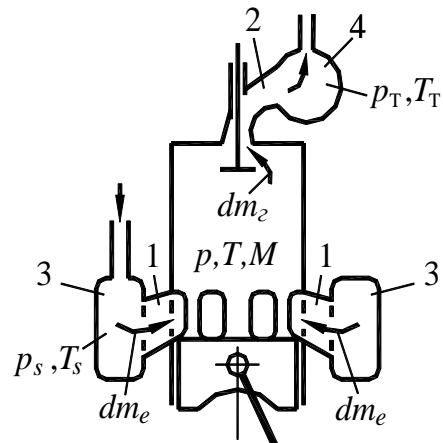


Fig. 3. Generalized scheme of an internal combustion engine
 1 - ventilating windows; 2 - exhaust duct;
 3 - filler receiver; 4 - exhaust receiver

equation of state.

$$dp = p \left[(k-1) \frac{H_u g_c dX}{MRT} + \frac{g_c dX}{M} - k \frac{dV}{V} \right] - \\ - (k-1) \frac{pdQ_w}{MRT} \quad (19)$$

To determine the temperature and pressure in the cylinder during the gas exchange processes is assumed that the temperature in the cylinder of the engine is different from the temperature in the filler collector, while the temperature in the outlet collector has a little difference to that in the cylinder. In this case, the equation of the first law of thermodynamics for the conditions of the engine cylinder will be the following,

$$idm_{in} - idm_{eff} = d(Mu) + pdV + dQ_w, \quad (20)$$

where: $idm_{in} = c_p T_{fc} dm_{in}$ is the enthalpy of the inflowing gases from the filler collector; T_{fc} - the gas temperature in the filler collector; $idm_{eff} = c_p T dm_{eff}$ - the enthalpy of the effluent gases from the cylinder of the engine; T - the gas temperature in the cylinder of the engine.

After transformation of (19) are obtained the equations for determining the temperature

$$dT = T \left[\begin{aligned} & \left(k \frac{T_{fc}}{T} - 1 \right) \frac{dm_{in}}{M} - (k-1) \frac{dm_{eff}}{M} - \\ & -(k-1) \frac{dV}{V} - (k-1) \frac{dQ_w}{MRT} \end{aligned} \right] \quad (21)$$

and pressure

$$dp = p \left[k \frac{T_{fc} dm_{in}}{TM} - k \frac{dm_{eff}}{M} - k \frac{dV}{V} - (k-1) \frac{dQ_w}{MRT} \right] \quad (22)$$

in the cylinder of the engine.

To determine the temperature and pressure in manifold is assumed that the temperature in the filler collector is different from the temperature in the engine cylinder. In this case, the equation of the first law of thermodynamics on the conditions of the collector will have the following form,

$$idm_{in} - idm_{eff} = d(Mu) + dQ_w \quad (23)$$

where: $idm_{in} = c_p T_c dm_{in}$ is the enthalpy of the inflowing air from the compressor or atmosphere; T_c - the temperature of the inflowing air from the compressor or atmosphere; $idm_{eff} = c_p T_{fc} dm_{eff}$ - the enthalpy of the effluent air from the filler collector; T_{fc} - air temperature in the filler collector.

After transformation of (23) are obtained the equations for determining the temperature

$$dT_{fc} = (k-1) \frac{T_{fc}}{M_{fc}} \left(dm_{in} - dm_{eff} - \frac{dQ_w}{RT_{fc}} \right), \quad (24)$$

and pressure

$$dp_{fc} = k \frac{p_{fc}}{M_{fc}} (dm_{in} - dm_{eff}) - (k-1) \frac{dQ_w}{M_{fc} RT_{fc}}, \quad (25)$$

in the filler collector of the engine.

To determine the temperature and pressure in the outlet collector equations are obtained which are identical with the equations (12) and (13), as the index "b" refers herein to the cylinder that acts as a barrel, and the index "chan" refers to the collector. It should be noted that the resulting equations for the collectors relate to one-cylinder engine or to the individual channel between the valve and the common part of the collector. To obtain equations relating to the general part of the collectors the elementary masses of influent and effluent gases of all cylinders must be added, dephased at the corresponding angle by the order of operation of the cylinders (Mutafchiev, 2002).

Equation (5) is used in order to obtain equation, which indicates the molar variation during the working process. The following equation is obtained:

$$dT = T \left[\begin{aligned} & (k-1) \frac{H_u g_c dX}{MRT} + \frac{g_c dX}{M} - \frac{dM}{M} - \\ & -(k-1) \frac{dV}{V} - (k-1) \frac{dQ_w}{MRT} \end{aligned} \right] \quad (26)$$

As a result of the fuel combustion some gases are exhausted, others are formed. The mass of the gases obtained after combustion is slightly greater than the mass of the gases before combustion. The ratio of the mass of the combustion products to the mass of the gases prior combustion represents the molar coefficient of variation μ . The following equation can be written for the mass variation of the gases during combustion

$$dM = \mu g_c dX. \quad (27)$$

By replacing (27) in (26) is obtained

$$dT = (k-1) T \left(\frac{H_u g_c dX}{MRT} - \frac{dV}{V} - \frac{dQ_w}{MRT} \right) + (\mu-1) \frac{g_c T dX}{M} \quad (28)$$

The last member of the above equation becomes zero if the molar amendment is ignored, which means that the equivalent member in equation (18) can be ignored also under certain conditions.

Figure 4 shows the indicator diagram of D3900 four-cycle diesel engine of auto tractor, obtained by calculations, which are made with the equations (19) and (22). Comparisons are made with experimental data for the working process,

obtained with piezo sensor and AVL digital recording equipment. The difference between the theoretical and experimental results for the range of the working process does not exceed 3%.

In order to apply the method for the combustion chambers of gas turbine vane engines it is accepted that the temperature in the combustion chamber of the engine is different from the temperature of inflowing air, while the temperature of the effluent gases has a little difference with that of the combustion chamber. In that case, taking into account that the volume of the combustion chamber is a constant, the equation of the first law of thermodynamics for the conditions of the combustion chamber of the engine will be:

$$dQ + u dm_g + idm_{in} - idm_{eff} = d(Mu) + dQ_w, \quad (29)$$

where: $idm_{in} = c_p T_{in} dm_{in}$ is the enthalpy of the inflowing gases from the compressor; T_{in} - the temperature of the inflowing gases from the compressor; $idm_{eff} = c_p T dm_{eff}$ - enthalpy of the effluent gases through the turbine; T - the gas temperature in the chamber of the engine; $dQ = H_u dm_{if}$ - the imported quantity of heat; dm_{if} - the elementary mass of the inflowing fuel; $u dm_g = c_v T dm_{if}$ - the internal energy of the generated combustion gases; dm_g - the elementary gas mass, formed as a result of combustion, it is assumed that $dm_g = dm_{if}$.

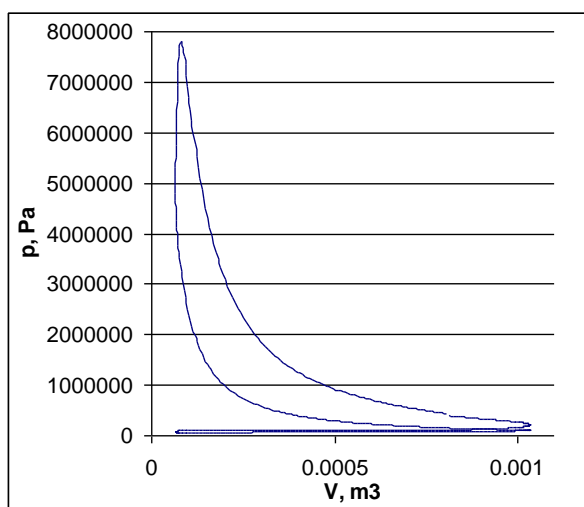


Fig. 4. Indicator diagram of D3900 four-cycle diesel engine of auto tractor.

After transformation of equation (28) for determining of the temperature it is obtained:

$$dT = \frac{T}{M} \left[(k-1) \left(\frac{H_u}{RT} + 1 \right) dm_{if} + \left(k \frac{T_{in}}{T} - 1 \right) dm_{in} - (k-1) dm_{eff} - (k-1) \frac{dQ_w}{RT} \right] \quad (30)$$

In the chamber of the rocket engine with liquid fuel, fuel and oxidant in a liquid phase enter, as there is an excess of oxidant. The excess oxidant passes into a gas phase not by combustion, but by evaporation whereat heat is absorbed. The absorbed heat by evaporation of the fuel and oxidant, which are involved in the combustion is even reported during the determination of the specific heat of combustion. For instance the specific heat of combustion of kerosene with liquid oxygen is four or five times less than the specific heat of combustion of kerosene with gaseous oxygen. In that case taking into account that the volume of the combustion chamber is a constant, the equation of the first law of thermodynamics will be the following,

$$dQ + u dm_g - idm_{eff} = d(Mu) + dQ_{ox} + dQ_w, \quad (31)$$

where dQ_{ox} is the elementary quantity of heat, required for evaporation of the excess oxidant.

For equation (31) is obtained

$$H_u dm_{if} + c_v T dm_{if} - c_p T dm_{eff} = M du + u dM + dQ_{ox} + dQ_w$$

The equation determining the temperature is obtained after transformation of the above

$$dT = (k-1) \frac{T}{M} \left(\frac{H_u dm_{if}}{RT} - dm_{eff} - \frac{dQ_{ox}}{RT} - \frac{dQ_w}{RT} \right) - \frac{T dm_{ox}}{M} \quad (32)$$

Fig. 5 shows the variation of pressure in the chamber of a rocket engine with liquid fuel. The temperature is determined by the equation (32) and the pressure with the state equation. The calculations are made for a conditional engine with 0.012 cubic meters volume of the chamber, 0.05 m diameter of the aperture, through which takes place the outflow, 40 kg/s fuel consumption for the upper curve of the figure, with a coefficient of excess oxidant - 1.5. Kerosene is approved for fuel

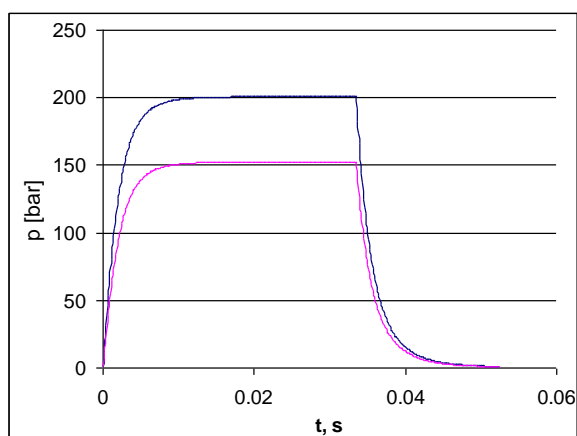


Fig. 5. Variation of pressure in the chamber of a rocket engine with liquid fuel.

and liquid oxygen for oxidant. In the figure clearly can be seen the starting process, established regime and engine braking.

3 CONCLUSIONS

The hypothesis that during addition of heat through combustion process that takes place in the workspace of the relevant technical object is not imported enthalpy, but internal energy, is proved. The developed equations for the internal ballistics and internal combustion engines have direct practical application in the design of new weapons and engines and in the optimization of existing constructions.

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MODERN APPROACHES TO MANAGEMENT OF RICE PRODUCE COMPLEX OF THE SOUTH OF RUSSIA

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Abstract

Formation of rice produce subcomplex of the country is one of the important tasks of modern stage of the AIC development that is conditioned by a range of factors: growth of public needs in high quality food produce, formation and development of sales, processing and trade infrastructure, planned growth of intensification of agricultural production, its concentration and specialization, development of intra-economic cooperation and agri-industrial integration. Formation and further development of rice-subcomplex demands the working out of new approaches to the organization of production, processing and realization of rice, creation of modern market infrastructure, forms and methods of the state's influence. The multilink in the system of management of rice subcomplex, doubling and parallelism in the work of sectoral, territorial and intra-sectoral organs of management essentially decrease the effectualness and efficiency of management. So the finding out of rational forms of combination of sectoral and territorial principles of formation and functioning of rice subcomplex – one of the urgent problems of improvement of management of agriculture in combination with other sectors of agri-industrial complex. A great economic significance has a research of these aspects on the regional level.

Keywords: Rice produce subcomplex, agri-industrial complex, AIC, agriculture, food structure of AIC, grain

1 INTRODUCTION

Nowadays the AIC takes the specific place in rooted formation of integral production-economic systems. Due to these produce the population can determine the level of its welfare and countries provide the necessary level of food safety.

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Agro Industrial Complex (AIC) consists of sectors which are specialized in production of agricultural products, their processing, and storage, have close production, economic interactions and provide with means of production of agricultural and processing industry. AIC is a complex changeable system, in which functionally all elements are interconnected and organizationally interacted concerning to the achievement of the main goal – effective production of agricultural



products, products of its processing and reaching them to a consumer.

There are the following types of AIC structure:

1. Functionally-sectoral; a set of sectors and types of AIC activity functioning in reproduction process;
2. Production-technological; an aggregate of resources and other elements of production (lands, machinery, equipment and et al).
3. Product oriented; an aggregate of product subcomplexes uniting a set of activity types concerning to different spheres of AIC technologically connected in production of specific types of final produce (product subcomplexes).
4. Territorial-aggregate of regional AIC forming AIC;
5. Social-aggregate of social groups and types of farms entering the AIC, rural territories.

At present time the structure of Russian AIC is far of perfection. Agriculture takes a main place (more 48% of total volume of AIC production, 68% of main production funds, 67% of production AIC sectors). In more developed world countries the main role in creation of final product comes to the third sphere of AIC (for example, in the USA 73% of AIC production comes to the share of processing and sales sectors but to the share of agriculture only 13%) 25% of main funds of the country nearly 30% of GDP and more 70% of output for a final consumer comes to the share of Russia AIC.

Despite of great efforts of the state, its governmental and regional structures directed to the development of agriculture of the country, situation in AIC in whole is getting worse. The catastrophe is coming – Russia has not been the powerful agrarian state yet. It can lead to total loss of food, staff and intellectual safety of the country, the beginning of its division on separate territories with participation of external and internal powers.

The modern, very heavy situation in the AIC of Russia can be characterized by the following realities:

1. Modern Russian agricultural production has a very low level of commercial produce in consequence of it, the products of their own

production are in short for population of our country. Subject to a region the life of the main part of population on 40-70% depends on import food. The threshold of food safety of the country must not be more than 30%.

2. Mass and control free privatization of enterprises of agricultural machinery led to the multiple decrease of industrial potential sector of the country. Many enterprises produced agricultural machinery earlier in the result of privatization stopped their activity, changed the profile or are in constant regime of waiting of bankruptcy and change of governing bodies. Present machinery are sold, staff is discharged, working places are liquidated, no one basic enterprise of agricultural machinery after privatization did not become to work better, we can see a fall of production everywhere.

The native engine engineering industry, production of hydro- and electrical equipment for agricultural machinery and many accessories to them (belts, chains, bearings and so on) are on very low technical level. The production of Russian new combine - harvesters “Acros” and “Torum” depends on foreign accessories.

3. Adopted in Russia in the beginning of 90s, the agrarian policy on “farming” of agricultural production did not justify itself. It accompanied as known by total decrease of large commodity production and their change on small farms. But the native farmer could not feed the country. The farming from which many waited a lot occurred ineffective in the conditions of Russia.
4. From pure market and political minds the experience of production of Russian large commodities farms is not popularized, especially those which came to in so called “Agro Clubs 300 and 100”. These farms don’t suit to centralized doctrine of small commodity farming of agricultural production. The same time the intensity of land use in the Club’s farms is higher than in other farms. In average, one farm of the Club “Agro-300” produces grain at 5 times more than any other farm from among farms. Revenues from realization of produce and services in farms of the Club “Agro-300” exceed revenues in other

farms in average more than at 200 times, so 800 farms entering the sectoral Clubs "Agro-300" give about one third of this products which are produced by 14 agricultural enterprises. These farms give us the convincing example of highly effective production of proper land management.

5. There was lost the control under technological policy in the field of technological and technical equipment of agriculture. The Ministry of Agriculture of Russia lost these functions. The coordination of works with "Soyuzzagromach", Russian Agricultural Academy and enterprises of the sector often are limited by personal contacts of their representatives. They does not have a general plant of work, there is a program of general intents. More than 20 firms of different countries without any certification of comparative state trials import their machinery to Russian market not determining its final effectiveness with an account of specificity of native agricultural production. Machinery is often purchased at the expense of the regional budget by personal order of the Governor without preliminary technological and economic substantiation. Sometimes the local governing bodies in agricultural sector even do not know that the foreign machinery was purchased by their management.
6. The technical equipment of agricultural production is rapidly decreased. In comparison with the production of machinery in 1990 the production of native tractors decreased at 10 times, combine-harvesters at 11 times. This led to that almost everywhere the technologies of agricultural works, optimal agro technological terms are breached and the losses of produce are increased.
7. Advertising grain reproduction in Russia and planned grain export in 20-25 mln tons of grain do not depend on harmonically developing agriculture. The yearly harvest of sales grain on the level of 100 mln tons is not determined by technological, staff and organizational possibilities of the country. The bin croppage pretends as cash grain. The great amount of exporting grain is realized in the bank of national interests in whole because this grain can be given to the development of the most

"early matured" sectors of agriculture-livestock and poultry breeding, to support native agricultural producers. The imported grain in financial equivalent does not return into agriculture by the target purpose. Food prices are increasing.

8. Engineering-technological service on the level of a district and a farm in its general civilized presentation is liquidized at fact. Only in some districts the systematic optimal technological provision of farms are worked out, new technologies and technics are introduced, consultations on specific engineering-technical problems, diverse and accessible service are organized. It is considered that the organization of the system is a interaction of components which are conditioned by the system and reflect as unstable as stable components and connection whereas a structure reflects only stable ones.

In connection with it, the conception of formal structure of AIC and its subcomplexes is connected with the necessity of a division of a subcomplexes and a structure of a subcomplexes respectively. Different approaches and differences in scientific literature in the determination of AIC sectors, sectoral content of subcomplexes partially are connected with it. The structure of the complex is determined by a function and aims of the system.

The AIC as an object of management presents a subsystem of public production and consequently is subjected to general laws of its development, however it has, along with other properties, peculiarities which are distinctive only to it.

The approach to the study of AIC as a system, formation of its subsystems as subcomplexes and especially rice produce sub complex, it is necessary to base this approach on research of essence of these systems and their elements to divide them objectively which are a part of an environment.

We remark that if elements have a connection with each other substantiated by their participation in realization of function of present system, they answer the criteria of systematic according to which elements can be determined as entering or not entering the system.

Function of the system expresses the necessity of the system, its purpose, meaning of existing which is set the task to the system from without-by the environment. The aim expresses internal "needs" of the system, whereas the function is needs of its environment.

We consider that functions play a main role in the system but not aims because the possibility of existing of the system depends on them: if a system executes its own function, the infeasibility of the aim as a rule does not threat and if the function is not executed the influence of the environment can be destructive for the system. The realization of the system's functions presents the functioning (behavior) of the system. The result of functioning of systems determines it. So, the efficiency of every system including rice produce subcomplex, is characterized by the satisfaction of the environment's needs, that by the completeness of execution of its functions concerning to the environment. It means the aim greatly influences both the structure and the behavior of the system but along with the function which assigns a decisive part and the aim must be accepted as a system-forming factor.

Executed reforms, change of the world power balance define new goals and tasks before the AIC of the country, so it is necessary to determine features and tasks of the AIC clearing up above mentioned information and taking into consideration the systematic approach to its research.

From our point of view, for more complete understanding of the essence of AIC functioning it is necessary to state the definition of the AIC based on understanding of it as a complex system.

As for us as objective functions of the AIC we should mark out:

- Stable supply of population of the country with for the products and other goods from agricultural materials;
- Supply of functioning with the specific system social infrastructure in places of AIC enterprises location.

It is necessary to mark out that the managing subsystem has its own functions and aims which can differ from goals of the system and can be

determined as an external environment as a peculiarity of functioning of managing subsystem. To our point of view the main goals of the AIC will be the supply of food safety and supply of its stable and effective functioning. Separating out of functions and aims of the AIC is a basis of determination of aims and goals of functioning of its subcomplexes (food subcomplexes, sectors, regional AIC).

In production-economic system of the AIC food vertical lines are singled out. The grain produce subcomplex concerns to such formations. The realization of food approach allows us to clearly determine the goal of grain produce of the subcomplex, to clear up its structure, to single out into independent goal-realizing system.

The necessity of singling out of the subcomplex as an independent production object is conditioned to supply with proportional, coordinated development of all sectors and functional subdivisions entering it as well. The grain produce subcomplex of the AIC includes the production-economic system of sectors and functional subdivisions which are interconnected by the generality of aims, economic interests and take part in production of grain and food of its processing. A range of objective processes led to its formation and functioning. In connection with industrialization of agriculture, transition of its material-technological base on industrial base the differentiation of agrarian sphere happened. On the other hand, elements of economic structure greatly depend on each other, on supplies of means of production, on their supply with material, financial and labor resources owing to public labor division, increase of independent sectors, enterprises, subdivisions.

All it leads to the decrease of possibility of their conscious management, regulation, orientation on the decision of concrete target sets, makes elements of economic structure to be combined, integrated, and cooperated in the agro industrial formation. The generality of aims of structural components is a main factor of integration processes.

In consequence of development of production forces the problem of creation of food formations becomes more acute. The sectoral approach

cannot solve the main tasks of intra-economic influence, so in the formation of the AIC it does not meet needs of high effective production. It leads to great economic losses, decrease of social and economic AIC effectiveness (Miloserdov, 2005). All publications devoted to the food AIC structure, contain conceptions of meaning of food subcomplexes. For better understanding of such structures some the most specific features singling out features and peculiarities must be analyzed.

1. Every food vertical line (food subcomplex) presents the chain of types of activity belonging to different spheres of sectors and subsectors and uniting technologically for organization production process beginning from production of specialized means of production for given product and finishing with realization of this product to meet needs of population in it (Kaishev, 2006) (Krylatykh, 1982).
2. "Food structure of the AIC is an aggregate of vertically integrated types of activity presenting the single process of production and leading to a consumer of definite type of final produce" (Vorob'ev, 2006).
3. "in structure of AIC we can single out a range of product subcomplexes – block of sectors connected with production or processing of agricultural raw materials" (Nuraliev, 2005) (Formation and improvement of AIC structure, 1983).
4. Food structure of AIC – "aggregate food subcomplexes uniting types of activity concerning to different spheres of AIC, technologically connected in production of concrete types of final produce (food subcomplexes)" (Nechaev, 2010).

In below cited definitions two main components can be singled out – structural and target. Every of it is characterized by some definite aspect and functioning of subcomplex – objective target and elements with help of each the realization makes possible. In first interpretation the definite aim of the subcomplexes is characterized as a production of concrete product in volume meeting public needs. In second interpretation it is limited by production and consists of an obtaining and leading to a consumer of some definite final

produce. Thirdly – in the sphere of production and can be limited by agriculture raw material processing. Fourthly, the determination of aim of the subcomplex is based on production of concrete final produce.

Some questions follow from analysis of given formulations: how food subcomplex aim is determined – production or leading to a consumer; production and satisfaction of needs, only production or processing of agricultural raw material. As for us the aim in first interpretation is set the most successful. In second and third definition the level of needs is not taken into account. The meaning of goals of the subcomplex present in third definition but only in first part can slightly conform to its target set.

In analyzed interpretations of definitions are not connected the target sets of the subcomplex with the task of supply of its social-economic efficiency.

Presenting the aim is necessary to mark the essential level of profitability of AIC which can supply with conditions to expand the reproduction. Only under these conditions the food subcomplex can quite effective function, solve the necessary set as of social as production problems.

Structural component of determination of food subcomplex is necessary to consider in two aspects. The first one is an internal structure and connections between its elements and the second one is a relation of the subcomplex to AIC. All definitions of food subcomplex includes as a structural element of the AIC economics. In this question all authors are unanimous. As to concern the question of its internal structure, there is not a well-defined view. In first two and fourth definitions the constructive element of the subcomplex is a term "type of activity" and in the third one "sector".

Such distinction can be explained by the difference of approaches to the study of food subcomplex. In first, second and fourth definition it considers as an object of management. In a given question it is important to define its limits – to manage, it is necessary to know how and by who. In connection with it, the functional structure is detailed to the level of a type of activity.

In the subcomplex there can be included only those sectors, subsectors, enterprises, functioning

of which fully or in main is orientated on implementation of target sets. The third definition is considered the structure of the subcomplex with the position of its representation as an object of research. In this case it is essential that the analysis of its aggregate blocks and determination of sector's accessories consisting of the subcomplex to one or another production sphere. The problem of organizational isolation of the subcomplex as a production-economic system does not stand.

As to V.A. Uzun, the coincidence of the food subcomplex content "...possible only at such level of specialization of production when the enterprise in all included into the subcomplex sectors and types of activity work only on given goal" (Uzun, 1984, p. 27).

It will be interesting for us in both cases at study of problems of formation and optimal functioning of structural elements of rice produce subcomplex. So, in dependence on certain context we will consider it in both aspects. Taking into account the worked out analysis of structural component of the subcomplex we can make the conclusion that its functionally sectoral content demands the specific substantiation which must be always connected with the aim of the subcomplex.

Due to considered conceptions of food subcomplex we can clear up its formulation: food subcomplex is a structural formation of the AIC functioning in the conditions of full economic independence, the final aim of which is a satisfaction of rational needs of the society in concrete nutrition or in a subject of consumption (from agricultural raw). Researches of many native economists: A.I. Altukhov, A.I. Okhapkina, A.I. Dobrynina, V.Ya. Uzun and others, including A.A. Gladilina, A.A. Nikonova, L.I. Ushvitsky, are devoted to the problem of nature of regional AIC and their produce subcomplexes. Many scientists consider in general the problems of development and functioning of rice produce subcomplex but there are little enlightened the problems of formation, development, improvement of rice produce of AIC subcomplex though it is a constituent part of general rice produce subcomplex. In publications of many scientists but not at full size specific peculiarities of rice-sowing sector are reflected. There is an objective

necessity to research the modern condition of production, processing and sales of rice on regional level. There are many essential theoretical and practical recommendations which demand specifications which would take into account some natural and organizational-economic conditions of the region. In connection with it, the specific practical significance acquires the research and working out of all possible ways of advancing of organizational-economic mechanism of management of production, sales of rice grains, raw rice on different levels and in enterprises of different organizational-legal forms of economy. There are different approaches to the determination of the conception "rice produce subcomplex". Some authors understand under rice produce the AIC subcomplexes the production-integrated sectors and as well as the functioning subdivisions taking part in the process of rice production and products of its processing, technological and scientific provision of this process and as well as to a consumer. We offer the author's interpretation of the conception of regional rice produce subcomplex which is an integrated production presenting the interconnected chain of productions concerning to different spheres and sectors of AIC but at the same time technologically interconnected to implement the rice production, its processing, storage, transportation, distribution. Taking into account the rice produce subcomplex as a complex system we single out four main structural aspects: reproductively functional, component, organizational, territorial or regional ones. The main target function of rice produce subcomplex is a maximum satisfaction of needs of population in products making from rice and supplement products. Others not less important functions of rice produce subcomplex are:

- creation of balanced rice market and raw of processing industry;
- reduction of losses on production lines;
- transportation-processing-rice sales;
- providing with food safety of the country in rice produce;
- fuller use production potentials in all spheres of rice produce AIC subcomplex;
- increase of compatibility of Russian rice on home and world market.

The normal functioning of rice farms is supplied at the expense of their connection with different sectors of public production. The revealing of sectors applying in production of final grain produce, determination of their belonging to concrete sphere is concerned to the research aspect of the problem of formation of rice produce subcomplex.

Regional rice produce subcomplexes of all stages in the conditions of the market are formed on the same principles as the AIC in whole. On the basis of finding the more essential functional connections which are closed in limits of a considered structure, the content of regional rice produce subcomplexes is determined. In practice, the joining of sectors in vertical blocks is implemented according to the similarity of final produce and initial raw material and as well as on specific volume of expenses and returns in their general structure. According to the specific volume the integrity of economic and technological connections is determined. These connections are traced well in chains on rice subcomplex on regional levels: producer-transport services-storage-processing production-trade-retailer consumer, among it, in the structure of expenses and especially in distribution of profit in our country, the great specific volume comes to intermediates and credit institutions. Related to concrete regional subcomplex of the sectors subsectors and separate types of activity influence directly the formation of market prices (general profit). Proportions of distribution of general profit on reverse cost production chain serves as an indicator of fairness and equivalence of exchange.

The general AIC of the country presents all spheres and branches, regional rice produce subcomplexes are presented by their part, even on the level of economic regions of the country.

The rice produce subcomplex of the country is presented in main South regional rice produce AIC subcomplex formed on the basis of economic district of the country, it is connected with the presence of necessary natural-climatic conditions which are demanded at rice growing in this district. The south regional rice produce subcomplex includes subcomplexes of Krasnodar, Primorsky regions, Rostov, Astrakhan regions and as well as republics of Kalmykia, Adygea, Dagestan.

All regional subcomplexes are open systems because their produce is supplied not only in its region but it imports, the enterprises of regional subcomplexes often use except its own the exported agricultural and other raw materials.

The specific attention is paid to rice complex of Krasnodar region which was created in 70-80s. It till nowadays is the largest one in Russia. At projecting and construction the best achievement of world and native ameliorative science and practice are used. It was made exceptionally with the aim of the country's rice provision there were given lands, unavailable for dry land management: salted, flooded, waterlogged. The rice produce subcomplex has the analogous with grain produce subcomplex of organizational structure. There are three spheres: production of means of production (1st sphere), directly rice-producing sector (2nd sphere) and sphere of processing and servicing (3rd sphere). Constituents of the 1st sphere includes: transport, agricultural and general machine-building industry producing technics, transport means and equipment of general and special purpose, enterprises of storage and grain processing, chemical industry producing mineral fertilizers, chemical means of plant protection, fungicides, oil-processing industry providing with fuels and others in grain sector. The definite part of means of industrial production is the same for cultivation of rice and other grain cultures, mainly, technical means and equipment is specific taking into account the peculiarities of rice cultivation in irrigation.

The second sphere is a rice-growing sector differing in its technology of rice cultivation from other grain connected with its cultivation on irrigated lands, it requires specialized the organizations on projecting of irrigated systems, the support in a working conditions, the control of water supply and so on.

The third sphere is an elevator- and transport farms working with transportation and storage raw-rice and rice-processing enterprises as well producing rice grain. This block of the third sphere concerns to the production infrastructure.

After transition to the market economics sharply increased the value of servicing structures which are concerned to the market infrastructure. They

are the different services: consultation, information, marketing, advertising, audit, certification, arbitrary, insurance, customs, financial service, small and large sales-intermediate companies which are occupied in rice and rice grain wholesale, distribution networks taking rice grain for realization in retail trade; commodity exchange and wholesale food markets. Some scientists offer to increase a number of AIC spheres to four singling out service information service and main chains of marketing in separate blocks. The more complex is intra-sectoral connections the higher is a role of social and production infrastructure.

Such types of activity which present the non-production sphere but are closely connected with rice production and other sectors of rice produce AIC subcomplex are included in social infrastructure. Systems of management by the spheres of the complex are the following: system of preparation, repeated preparation and increase of qualification of staff, housing and communal services, organization and subdivision of scientific provision and others.

The production infrastructure presents a group of sectors specialized on production service. The service infrastructure of rice produce subcomplex is presented by scientific and experimental stations implementing works on improvement of technologies (Rice SRI) on selection, nature-protecting arrangements and others, enterprises and subdivisions of agrochemical, amelioration, information service, transport service, services of technical service and repair enterprises, trade sphere and others.

The rice produce subcomplex presents in itself the complex dynamic system including in production enterprises functioning directly in agriculture and in infrastructure of grain procurements and storages, in processing, food and mixed fodder industry, trade sphere. These various enterprises also are interconnected between technological and organizational-economic relations on the basis of which the intermediate and final consumers receive possibilities for obtaining and use of increasingly assortment of products produced from rice [Fig. 1].

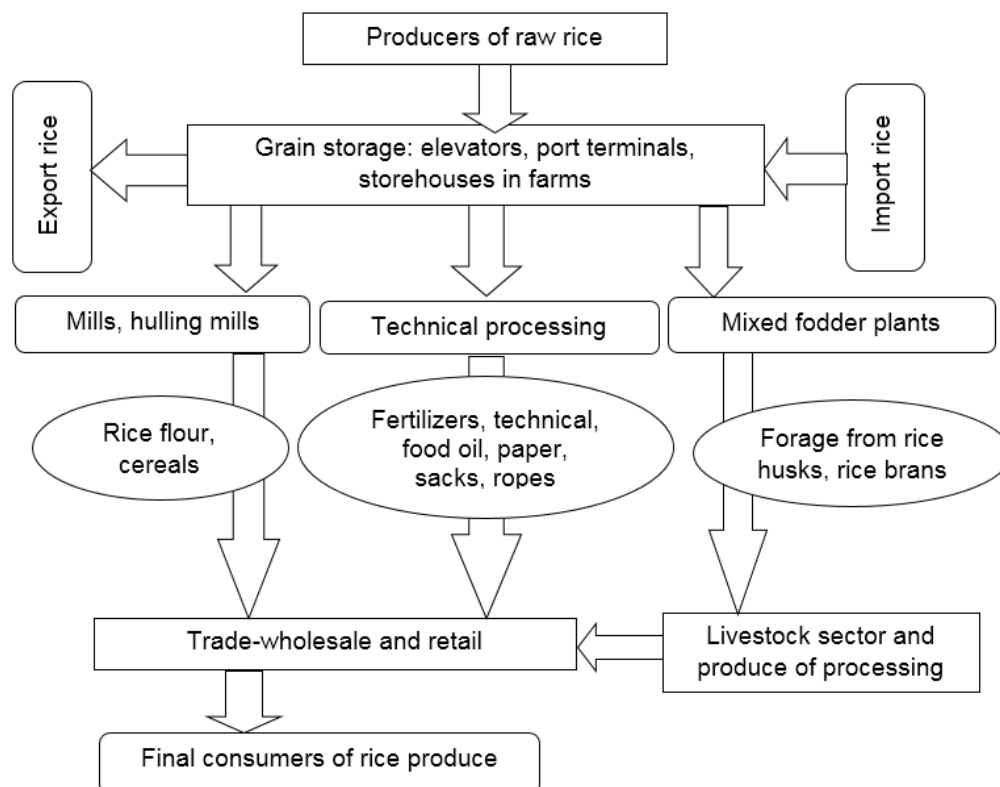


Fig. 1 Macro model of production infrastructure of rice production subcomplex

Carried out researches allowed us to summarize some peculiarities appropriate to Russian rice produce subcomplex. The enterprises of the 1st sphere of AIC rice produce subcomplex connected with grain producers till nowadays are in economic crisis, partial use of powers, production of noncompetitive produce and as a consequence, vacancy of its agricultural producers, instability of institutional bases which is conditioned by constant change of owners of Russian machine-building plants, ambiguity of perspectives of their development are intrinsic to it. The degree of development of 1st sphere of given subcomplex in the field of production of the system of machines does not allow in full size to use intensive technologies of grain cultivation and present foreign analogues on the market have very high price.

Essential changes are characteristic for the 2nd sphere of rice produce subcomplex of AIC. In connection with reduction of grain production and in combination with control-free transfer of large financial funds from grain industry through disparity of prices on grain and industrial produce and other ways of free withdrawal of funds, finally, led to the level of make-out of rice-growing farms and redistribution of revenues from grain production into the sphere of processing and especially in the sphere of circulation, enrichment of multiple grain sub-purchasers, expansion of shadow grain trade, criminalization of functioning of intermediary structures.

In consequence of essential reduction of state support found themselves on the verge of surviving of grain selection and seed-growing sectors. The volumes of selection works are reduced, the scientific-production and production systems on variety seeds and grain obtaining practically stopped their activity.

The peculiarity of the 3rd sphere of AIC is significant outflow of agricultural raw material from large-tonnage production. In this case the rice-processing industry is not an exclusion. At present time the spontaneous increase of hulling mills is going on, many of them are characterized by low efficiency of production, use of technologies not meeting the scientific requirements. Hence, there is the significant quality of low quality grain. The increase of rice produce subcomplex increase

provides the following trends:

1. The working out and introduction of modern, innovation resource - and moisture saving technologies of agricultural plant cultivation with taking into account of adaptation to local soil-climatic conditions. The total introduction into production of resource-saving technologies will allow decreasing the period of field works, to cut labor expenses on 14-30% and the fuel costs on 15-35%.
2. The optimization of agricultural plant allocation on the territory of Krasnodar region in the aims of maximum realization of biological potential of cultures, economy of resources and obtaining of the most part of economic profit.
3. The selection of more adaptive varieties and hybrids, sowings of high-quality seeds of local varieties. They are such varieties as: "Regul", "Papan", "Khazar", "Lider", "Liman" and others.
4. The advancing of grain storage and transportation and products of its processing. Losses of commodity products on regional level achieve 30% and more because of imperfection of the system of storage and transportation.
5. The increase of grain quality produced in the region. The obtaining in extreme conditions of increasingly high yields with high technological qualities which are competitive on internal and world markets must become the strategic aim of the sector's development. The increase of rice croppage provides in connection with it.
6. The introduction of resource-saving technologies of grain processing. The up-to-date equipment of processing enterprises will not allow supplying the highly effective production that negatively influences the compatibility of Russian produce.
7. The development of infrastructure of grain market, sales of finished products, mainly, are implemented in a net of sub-purchasers and mediators which set the final prices that interfere to commodity producers overlap the production expenses with earnings.

The problems of formation, functioning, regulation and increase of effectiveness of functioning of regional rice produce subcomplex (RPS) are key

ones in our AIC and cause the essential influence on food safety of the country. Except of it, the stable production of grain serves as an important constituent for formation of revenues of all levels at the expense of tax returns from processing and realization of grain.

The multiple effect from formation of organized and stable functioning national grain produce subcomplex will allow to decide many economic, inter- and intra-sectoral problems.

The constant improvement of principles of development of regional rice produce subcomplexes is required to solve these and many other problems, to form newly the regional proportions of reproduction, to conform the economic activity of sectors and enterprises, considerably separate for the years of reforms even in our regions. It is necessary to work out more rational structure of regional rice produce subcomplexes aiming to obtaining of produce maximum, considerable decrease of production expenses, losses, improvement of economic mechanism. In scientific works the mechanism of functioning of AIC subcomplexes often is considered either from the position of interests of agricultural producers or processing sectors, or resource suppliers.

The formation of rice produce subcomplex of the country is one of the main tasks of modern stage of AIC development, it is conditioned by a set of

factors: growth of public needs in high-quality food products, formation and development of sales, processing and trade infrastructure with the growth of intensification of agricultural production, its concentration and specialization, development of intra-economic cooperation and agro-industrial integration. The earlier the course to dynamic balance of the subcomplex will be taken, the faster and more effective the recovering and development will be.

That's why it is important in the conditions of the market to use the conceptual approaches of proper formation of RPC in the country in whole and the account of territorial, natural, economic peculiarities of the region and scientific-technical, social, ecologic and other factors.

The formation and the further development of rice subcomplex demands the working outs of new approaches to the organization of production, processing and realization of infrastructure, forms and methods of state influence. The multisection in the system of management by rice subcomplex, doubling and parallelism on the work of sectoral, territorial and intra-sectoral bodies of management essentially decrease the efficiency and immediacy of management. So, the finding of rational forms of combination of sectoral and territorial principles of formation and functioning of rice subcomplex is one of the urgent problems of agriculture improvement in combination with AIC other sectors.

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STATUS AND PRACTICES FOR MANAGING CONSTRUCTION WASTE IN THE REPUBLIC OF BULGARIA

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Abstract

This report discusses the need for construction and demolition waste management aimed at preserving the environment. It points out the need for waste management in the country based on practices adopted in the European Union. The report makes an analysis of the current state of construction and demolition waste management in the Republic of Bulgaria. It points out the existing practices of collection and transportation of construction and demolition waste. It also points out practices with negative effect on these processes. The report identifies specific characteristics of construction and demolition waste management. Along with solutions to problems with environmental protection, the report underscores the need for understanding and application of the social and economic opportunities that underlie effective construction and demolition waste management. The report outlines the major directions for work and the practical actions needed for recycling the construction waste. The report shows the main sources of waste creation from construction and demolition in the Republic of Bulgaria in the upcoming years until 2020. The report lays out in brief the factors that influence and will influence the volume and characteristics of construction and demolition waste. The report identifies the positive changes and effects that should occur as a result of the developed and implemented Strategic Plan for Management of Construction and Demolition Waste in the Republic of Bulgaria for 2011-2020. It points out the expected probable amounts for the different types of construction and demolition waste by 2020. The report identifies the goals of the adopted Ordinance for Management of Construction Waste and Application of Recycled Construction Materials. Favorable legal and economic conditions for the deployment of new technologies for construction waste recycling and recovery are expected as a result of achieving these goals in accordance with the financial situation of the companies and the state. The report draws the conclusion that the implementation of the Strategy and the requirements of the Ordinance will help reduce the negative impact on the environment and stimulate investment in waste management.

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1. INTRODUCTION

Sustainable management of natural resources and waste takes an extremely important place in environment preservation and is at the core of harmonious socioeconomic development of society.

In the past 30 years, waste was at the basis of European Union environmental policy. In terms of waste management, significant progress has been made. Over time waste began to be seen as a valuable resource for the industry. Reuse, recycling and reclaiming of energy from waste is applied to reduce its quantity. Despite the progress made, waste continues to be a problem. Moreover, an increase in the quantities of generated waste is reported. The potential for reuse, recycling and reclaiming of waste is not yet fully exploited. New knowledge about the environmental impact of these resources should be fully reflected in policy on waste management.

2. MANAGING CONSTRUCTION WASTE IN BULGARIA

Waste management, including construction waste, both in the European Union and the Republic of Bulgaria is based on a hierarchy of priorities set out in the legal framework. The first priority is the prevention of the generation of construction waste, followed by reclaiming and recycling of waste, and last but not least – ways of waste disposal. It is necessary to follow this hierarchy while at the same time in each specific case the best solution should be sought with regards to environment protection.

On top of this, consideration should be given to the social aspects and economic capabilities. Construction and demolition waste in most cases have good characteristics and the recycled materials from construction and demolition waste is with a comparable quality to that of natural resources.

Construction and demolition waste management actions that have been adopted internationally and within the European Union are regulated by the

legal framework. This framework overall consists of:

- Directive 2006/12/EC on waste;
- Decision of the European Commission (COM 2000/532/EC) establishing a list of wastes
- Directive 1999/31/EC on the landfill of waste;
- Council Decision establishing criteria and procedures for the acceptance of waste at landfills (2003/33/EC);
- Directive (89/106/EEC) on construction products.

In accordance with the legal framework and the requirements set in it, the practical activities in the processing of construction waste should be aimed to:

- Development of specific regulations for the management of construction waste based on hierarchical principles, the responsibilities of the producer of this waste and improvement of administrative functions;
- Binding between the issuance of a construction permit and requirements for the separation of waste at the place of their formation, in order to facilitate further management;
- Stimulation of controlled demolition procedures as a prerequisite for obtaining recyclable materials with quality indicators relevant to their new application;
- Development of economic and financial criteria, promoting the use of recycled materials instead of natural resources;
- Use of recycled construction waste with a suitable fractional composition for technical rehabilitation of threatened areas;
- Solving environmental aspects of recycling and the use of construction waste for safeguarding the ecological balance between man and nature;
- Giving absolute priority to recycling and creating conditions for that – reducing the disposal of construction waste within the possibilities of the specific stage, which above all means implementing widespread separate waste collection;

- Introduction of standards (according to European requirements) that are applicable to both ordinary materials and those derived from construction and demolition waste recycling. For example, the current standard for aggregates for concrete does not include recycled aggregates, as it is based on old Bulgarian state standards;
- Suspension of the harmful practice for hazardous construction and demolition waste, due to limited number of landfills for hazardous construction and demolition waste, to be deposited in existing landfills for household waste. Furthermore, this practice destroys components of construction and demolition waste that can be reclaimed.
- Implementation of a system (scheme) for tracking of waste by composition and quantities from the moment of their formation until their reclaiming or disposal, if they contain hazardous construction and demolition waste. This is especially important in the forced demolition of illegal (and for other reasons) construction sites.
- Elimination of the illegal transportation of construction waste, which is a problem among more developed European countries as well.
- Choice of methods and technologies for the recycling of construction and demolition waste as a function of their economic, technical, technological, organizational, social and environmental viability. In our opinion, waste treatment methods are also due for serious rethinking (and ranking). As an example, waste incineration main problem arises from the incompatibility of the presently known incineration facilities with modern requirements. They are definitely not compatible with other types of waste treatment – not coincidentally, waste incineration is now considered an obsolescent technology in developed countries;
- Provision by the state of conditions for producing and selling recycled materials from construction and demolition waste, at an affordable price and satisfactory quality;
- While in the design of buildings and facilities to take measures to reduce waste in the subsequent destruction and allow reuse;
- Setting of specific requirements for producers to discontinue the use of harmful substances in the materials and products for construction (such as asbestos, other flame retardants, heavy metals, etc.). As an example, bituminous waterproofing of concrete reduces the degree of recyclability subsequently;
- Guarantee a no-compromise enforcement of the legal requirements for construction and demolition waste management and a systematic harmonization with the European requirements for environmentally sound management of natural resources and waste.

EU policy on waste management is based on the concept of hierarchy in waste management. This means to focus primarily on:

- Prevention based on the possibilities at waste creation;
- Recycling and reuse where prevention is not possible;
- Landfilling as a last resort, as this is considered in the Concept of the EU to be the most unfavorable way of waste treatment.

Despite the fact that European legislation on waste is continuously improving, some problems of the legal framework still remain. Directive 2006/12/EC, for example, contains the definitions “recovery” and “disposal” of waste and methods of their utilization by:

- Extraction of raw materials and energy from waste;
- The methods of final disposal of waste by incineration or land-filling.

The current state, however, shows what happens as a result of land-filling, as well as in subsequent waste treatment. In our opinion, methods of waste treatment are also subject to serious rethinking (and ranking). As an example, during waste incineration the main problem arises from the incompatibility of the presently known incineration facilities with modern requirements. They are definitely not compatible with other types of waste treatment either; not accidentally, incineration in developed countries is now considered a dying technology. The still unsatisfactory state of separate waste collection and separate treatment is added on top of these issues with both land-filling and incineration.

Management of waste from construction, repair and maintenance of buildings currently in Republic of Bulgaria is performed under local regulations for waste management. Almost all of the construction and demolition waste is deposited at landfills still exist in many municipalities sites, provisionally called "construction waste landfills".

Existing practices in collection and transportation of waste from households in the municipalities are very different. In the majority of municipalities (so far) population who performs repairs paid for the services, transportation and disposal of construction and demolition waste companies that perform this service. In many communities this is done by so called Local Domestic Municipal Services. There is also a practice known small quantities of waste from maintenance and repair of buildings to be disposed of in household waste containers, and larger amounts to be placed in containers, as subsequently transported by the companies carrying out the collection of household waste. These practices can not be considered good. They should definitely be suspended after the construction and operation of regional landfills by close all illegal landfills for municipal and construction waste.

Waste that occur on sites undergoing construction and demolition or reconstruction of buildings containing insulation, gypsum, foil wrapping, small amounts of concrete, broken bricks and tiles, waterproofing materials, wood waste residues plaster and plaster and other landfilled or used for backfilling .

Demolition is an activity in which considerable amounts of waste, most of which have a high potential for recycling. Currently in Republic of Bulgaria are more than 50 companies engaged in demolition. Activities of these companies is regulated by Law on Spatial Planning. Companies engaged in these activities are provided with modern equipment for demolition of concrete and brick buildings and facilities, including the organization and use of processes Demolition, Salvage and disposal of construction waste. In some cases demolition sorting in place of bricks, metal and wood waste. Subsequently transmitted to the metal scrap, wood waste are burned, and the bricks were reused.

In recent years, Republic of Bulgaria create unregulated markets for recycled materials, which is currently not the requisite controls.

Construction and repair activity associated with the formation of large amounts of waste that can be recycled. While the construction and repair of road infrastructure in the Republic of Bulgaria is an activity that incorporates great potential for use of recycled building materials. Unfortunately, the management activities of waste generated by the construction and repair of roads are still only partially covered by the management and control of waste in Republic of Bulgaria. There nebhodimost than just regulating the obligations of contracting authorities and contractors of construction and repair of roads and the establishment of mechanisms to monitor and control the movement and use of waste .

Landfill construction and demolition waste is still the main method of disposal of the construction and demolition waste in the country. At the time and the disposal of these wastes is covered by the following structure:

- 12 pieces municipal construction waste landfills;
- 131 number of landfills;
- 27 number of regional landfills.

Outside these landfills are still in the country has the practice of unregulated disposal of construction and demolition waste unauthorized places, most often located on the outskirts of the settlements.

Factors that influence the size and characteristics of the waste, construction and demolition are different. Unlike household waste, they can not be directly linked to the number of the population. They must be linked to the characteristics of local differences in the renovation of buildings, restructuring of local and outside urban areas, construction and technical aspects of buildings and facilities to be constructed, the buildings are subject to rehabilitation and reconstruction and buildings that will pull down. The dynamics of generating construction and demolition waste than those purely technical factors had an impact and will continue to have the processes of urban development in the country. In this case, they could be arranged as follows:

- The period of transition caused a crisis in urban development in terms of unfinished public buildings not intended to meet the changed socio-economic conditions;
- Due to the complex social and economic reasons, the development of settlements in the country runs extremely uneven - during the construction boom, for example, the expansion of the construction is realized mainly in and around big cities (Sofia, Plovdiv, Varna, Burgas). It was dictated mainly by the state of the market - demand for residential, office and commercial buildings, but due to lack of regulatory mechanisms lead to a glut in the market. In this period were made and investments without basing itself on a clear vision for the future and as a consequence - the wake of an economic crisis, these investments remained unfinished and unsold, ie, it went into operation.
- In view of the persistent demographic trends of population decline can be expected that the new construction will be mainly related primarily qualitative and less quantitative changes;
- Hospitality construction and development, the analysis of which shows excessive construction at sea and mountain resorts and violations of environmental, zoning and construction technical standards, creates potential sources of demolition waste and in the coming years only construction in the balneotherapy tourism can be expected.

As a result of the various analyzes and forecasts based on them the sources of formation of construction and demolition waste can be assumed that the major source of the construction and demolition waste in the next 2020 will be the road sector. This is justified by the fact that the cash that will get Republic of Bulgaria on European programs will be focused mainly on road and rail sector. Given the great opportunities for recycling and recovery of these sectors generated by the construction and demolition waste can be considered that this would be a favorable profile of construction and demolition waste.

To create conditions for effective management was developed Strategic Plan for waste

management of construction and demolition waste on the territory of Bulgaria for the period 2011 – 2020.

National Strategic Plan for waste management of construction and demolition has been developed based on the results of the feasibility study "Preparation of a national strategy for the management of construction waste and demolition." Based on pooled data from different sources and their analysis are made suggestions and expert forecasts are proposed legislative changes and measures to develop infrastructure for 10 years.

Analysis of the current state of the construction and demolition waste and the identification of the problems are the basis on which defined the objectives of the Strategic Plan and related measures in the Action Plan. In it for each of these measures are defined and accountable institutions necessary financial resources to ensure the implementation of the Strategic Plan for the period 2011 - 2020.

In identifying and ranking the measures set out in the National Strategic Plan, the fundamental principles of waste management regulated in the Republic in accordance with the common European and national policies in the field of waste management in construction.

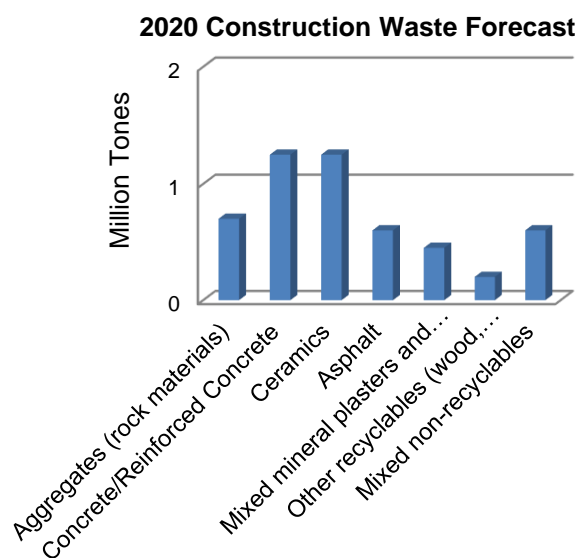


Fig. 1 Construction Waste Forecast
 Source: (National Strategic Plan, 2011)

The basic principles underlying the plan are as follows:

- Sustainable development;
- Principle of prevention;
- The principle of self-sufficiency and proximity in waste management;
- hierarchy of waste management;
- Reduce costs by using good technique and technology;
- Responsibilities of pollutants.

As shown in figure 1, based on the developed National Strategic Plan, the expected quantities of different types of construction and demolition waste in 2020 are as follows:

- Aggregates (rock materials) – 700 000 tons;
- Concrete / Reinforced Concrete – 1 250 000 tons;
- Ceramics – 1 250 000 tons;
- Asphalt – 600 000 tons;
- Mixed mineral plasters and others – 450 000 tons;
- Other recyclables (wood, paper, metal) – 200 000 tons;
- Mixed non-recyclables – 600 000 tons

In order to create conditions for effective management and implementation of policy on use of construction waste and use of recycled building materials in the country was the Ordinance on management of construction waste and use of recycled building materials, which entered into force on 13.11.2013, the ordinance aims to create favorable legal and economic conditions for the deployment of technologies to achieve the targets for recovery and recycling of construction waste, according to the financial situation of the companies and the state. The ordinance creating conditions for the production and marketing of materials derived from recycling of construction waste that is commensurate with the quality of the natural raw materials used in construction.

Implementation of the tasks set out in the new regulation will contribute to the sustainable development of Bulgaria as a result of successful waste management of construction and demolition while will reduce the negative environmental impact caused by the construction waste generated, to improve efficiency of resource use,

stimulate investment in waste management and to increase the responsibilities of companies and individuals that cause pollution.

The Ordinance complies with the requirements of the Framework Directive 2008/98/EC on waste. It can be considered that the implementation of the requirements of the Regulation will lead to the goal – in 2020 to recycle and recover at least 70% by weight of construction waste in the country.

The main objective of the normative document is to contribute to sustainable development of the Republic of Bulgaria through an integrated framework for managing waste from construction and demolition to reduce the environmental impacts caused by the construction waste generated, improving the efficiency of resource use, increased responsibilities, and encouraging investment in waste management.

The ordinance provides important requirements:

- Selective deconstruction of buildings with separation of the main components;
- Sorting of waste during the execution of construction and repairs;
- Preparation of operational plans for the management of construction waste;
- Recycling using a variety of modern facilities and use of recycled materials back into production.

The requirements for the preparation of management plans for construction waste will create conditions for ensuring the traceability of the waste from the moment of their formation until they are used as building resource, or possibly their disposal.

The management plan for construction waste should include:

- Data and description of the site of origin of the waste;
- Estimated justification for the type and volume of construction waste generated and the level of material recovery;
- Forecast plan type and quantity of product recovered from construction waste to be invested in this project;
- Measures builder must comply with the implementation, including waste prevention, preparation for re-use, recycling or making

points to recycling, recovery in backfilling eventually disposal, etc.

In accordance with the Ordinance, contracting of construction works projects financed by public funds, are responsible for the use in the construction of a certain percentage of products derived from the recycling of construction waste. The introduction of this requirement aims to ensure a market for the products of the recycling of construction waste, and encouraging businesses to invest in infrastructure for recycling construction waste. In fact, it can be expected the development of new industrial market for recycling construction waste and their inclusion as components of construction materials. There will also be creating a market for processed construction waste and to regulate and facilitate their reuse in construction.

3. CONCLUSIONS

As a result of the implementation of the Regulation can be expected achievement of priority national objectives such as the significant amount of construction waste generated in 2020, creating

favorable conditions for building the necessary infrastructure and provide a market for recycled construction waste and their use in construction or in the manufacture of building products.

Ordinance builds legal regulation in our country, is meeting the European requirements. It regulates the legal management of construction waste, their processing and the development of the market of construction materials derived from recycled materials.

The implementation of the proposed Ordinance will result in the creation of common environmental requirements to reduce pollution of air, water and soil as a result of treatment of construction waste and their management and control in construction and demolition. Will create the conditions for effective management of construction waste, which leads to the construction of environmentally friendly management and control of the collection, transportation and use of recycled construction waste in construction.

Waste management will reduce their harmful effects on human health and the environment.

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FRANCHISING – A FLEXIBLE METHOD FOR DEVELOPMENT OF THE TRANSPORT SECTOR

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JEL Category: **M5, O18**

Abstract

The problems connected with developing an efficient market mechanism, enhancing the competitiveness of manufactured goods and services and the availability of working market institutions are of crucial importance for the countries that have taken the path of economic integration. During the last few years, franchising as a model for development of business activity gets more popular in Bulgaria. This allows Bulgarian companies to be more competitive and to provide services with better quality. This article will analyze the possibilities of franchise development business, including a transport business. The practice shows that the transport companies which work by means of franchise business model and use the name of a big and well-known company as well as its know-how work much more motivated and economically and with lower costs. This method of performing business is favored by the implementation of the best practices of an already established brand, of the working and well-known business. It provides the opportunity for achieving stable positions at the market.

Key words: *franchising, transport, development, investments*

1 INTRODUCTION

Franchises are mechanisms that allow starting of own business with own investments and risk by using the brand name of the franchisor. For successful development of the business it is necessary for the franchisee to strictly comply with the requirements of the franchise system.

These factors determine franchising as low risky way to start a business activity.

With the shrunk export markets, part of the foreign producers have faced the need for rapid restructuring, reduction of costs and increasing

efficiency by targeting industries that replace imports.

As a result of the franchise agreements one provides the opportunity for more favorable conditions and access to the market of goods and labor force.

This method of performing business is favored by the implementation of the best practices of an already established brand, of the working and well-known business. It provides the opportunity for achieving stable positions at the market.

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2 THE FRANCHISING - SPECIFIC FORM OF COMMERCIAL COOPERATION OF THE TRANSPORT COMPANY

In the transport sector the use of franchising as business strategy is a good decision for the enlargement of the market presence of the transport company.

The transport companies which work by means of such a model are characterized with a good competitiveness when performing transports in the country and abroad (mainly of cargoes), shipping services, and mediation. In general the offered transport service is preferred because of the quality and the expertise, with which it is performed.

The practice shows that the transport companies which work by means of franchise business model and use the name of a big and well-known company as well as its know-how work much more motivated and economically and with lower costs.

Widening the range of goods for transportation within the national, regional and international logistical and distribution chains requires the transportation systems to adapt to the new operational conditions. The integrated freight transport services are oriented towards the priorities such as costs, time and reliability of deliveries, thus increasing the role of transportation in creating the value chains. (Kirova, 2013)

Organizations working in the area of transportation and logistics operate with mass amounts of data. Today's problem is not to collect data, but understand collected data and analyze them on appropriate way, to improve efficiency. It is a difficult task.

To create useful data companies must define the most significant indicators and monitor them in time. It is difficult to monitor great number of specific data formatted as tables. Diagrams and charts are much more convenient. But, sometimes it is difficult to keep up to date these graphical presentations. (Čekerevac, 2013)

To meet the customers' expectations and demands in competitive environment, the company introduced previously unknown forms of

activity in the form of significant variety of transport services through specific actions from the management sphere.

Lowering the cost of rolling stock in turn led to substantial travel price reductions and increased the quality of services. Consequently, this resulted in the company's financial results, guided by the criterion of profit, customer satisfaction, and increasing value of its tangible and intangible assets. (Tomaszewski, 2013)

But theoretical and practical knowledge in the field of transport acquired through years has showed that the existence of „perfect“ predefined procedures and rules is not an effective barrier for preventing human errors - they may happen at any time and in any workplace (due to one or another causal factor). (Georgiev, 2012)

As a result of the franchise agreements one provides the opportunity for more favorable conditions and access to the market of goods and labor force. This method of performing business is favored by the implementation of the best practices of an already established brand, of the working and well-known business. It provides the opportunity for achieving stable positions at the market.

When choosing the appropriate franchise system, the following strategy should be kept:

- Correctly defined business activity;
- Information about the partner;
- Mutual business interests with the partner;
- Estimating partner's expectations;
- SWOT analysis;
- Sharing the responsibility among partners;
- Evaluation of risk, as well as the possibilities of taking and sharing the risk.

The dynamic development of the economy provides the possibility for enhancing the use of the franchising as a specific form of commercial cooperation, providing obtaining of profit for a relatively short period of time.

The franchising worldwide has proven itself as one of the most successful business models and is characterized by the lowest risk when starting the business.

The inclusion into a franchise chain provides the entrepreneur who has decided to develop his own business, with the possibility to use the brand of the company as well as its business model.

The franchising is a modern integration process in the field of distribution, sales and consulting in which a company, referred to as franchiser provides the other person or company - franchisee with the right to produce and/or to sale products under observance of specific conditions.

In Bulgaria the first franchise cooperations have occurred in the 70's of the twentieth century, but with the strong growth of the industry in the middle of the 90's this form of business starts developing more and more. In many economic sectors there are present big franchises or chains, which use franchise.

With the acceptance of Bulgaria into the European Union in 2007 the attractiveness of the country has increased, which from its part has attracted more investments and franchising. The perspectives are directed towards enlargement of the market of goods and services by means of use of more renowned commercial brands.

This growth and strong development is observed in the last few years when in Bulgaria there is a growth of foreign and Bulgarian franchisers developing business at the Bulgarian market. Currently 119 companies have working franchise chains.

In 2014 the venues in Bulgaria which exist under the form of franchise are 3368 which is 16% growth in comparison with the previous year. The statistics shows that averagely per one franchiser in Bulgaria there are 28.4 venues, which is due to the big chains which form the great number of franchisees.

The franchising is a bilateral contract by means of which the franchiser provides license or gives permission for the performance of a specific business by the franchisee, under the name and the commercial brand of the franchiser and with use of the given by the franchiser methods.

The average term of the contract of franchising is 4.5 years. Interesting is the fact that the own venues of the franchisers are 16% of all working

venues and the other 84% are owned by the franchisees.

Under the conditions of economic and financial crisis the franchising business model provides opportunity for developing a business, as it gives to the entrepreneur more safety and warranty for success, setting great store by a well-known and safe brand.

The entrepreneur can have the desired success without having great investments and under observance of the specific contractual agreements with the franchiser. The Bulgarian franchisers are competitive with regard to the world companies and are able to impose their brands and know-how.

The development of the franchise models in Bulgaria is directed mainly in the sphere of services. One accounts a serious growth in the last years of the number of companies, offering franchising. This development especially in the present complicated economical period has been originated by the possibilities, which the franchising gives for starting or enlarging a particular business by the entrepreneur. Franchising business have traditionally good positions with the fast food chains.

The use of franchise model in 2014 in Bulgaria has enhanced its specter of operation, as from which there have made use for development of business owners of companies in the tourist sector, bakeries, sport shops, car washes, car garages etc.

Typical for the market is that the Bulgarian manufacturers are more and more developing franchise chains of stores in which they sell their products.

The coming out at foreign markets is a necessity for the Bulgarian companies. This provides them with possibility for stabilization of the business, popularization of the product, as well as with conditions for realization of a bigger profit.

The franchising is one of the safest ways to start business with small own capital compared to the business enterprise by itself.

In Bulgaria there are mainly small and middle sized enterprises, which cover 76% of the

employees and ensure 61% of the total added value. This phenomenon is observed in the other countries of the European Union. The economic crisis has put under strong impact the companies and have pressed them to increase the productivity and to enhance their markets.

After the entrance of the country into the European Union the number of the small and middle sized enterprises grows annually and the Bulgarian entrepreneurs have adapted themselves to the new conditions which the rules of EU and the Common Market has created. One has provided opportunity for the small and middle sized enterprises easier to make use of the commercial brands and to protect their patents.

The small and middle sized enterprises are flexible and easily adaptable to the changeable economic conditions. However, the lack of financial funds for development of the small and middle sized business lead to the bankruptcy of many companies.

Therefore the use of franchising strategy is extremely appropriate for the existence and development of the small and middle sized enterprises and their connection with the big business. This determines them as most appropriate purchasers of franchise.

The franchising is one good perspective for development of the Bulgarian economy which provides Bulgaria with the opportunity to attract foreign experience and capital into the country.

This allows the improvement of the quality of servicing in the various economic sectors, to acquire know-how and to achieve world standards set by the corresponding brand.

It is important with the franchising how big the term of return ability of the made investment should be. Depending on the model of franchising, on the economic sector and on the type of business this term of return ability of the investment for Bulgaria is from 2 months to 5 years as it mainly depends on the possibilities of the franchisee.

The presence of managerial and commercial experience, creativity, flair and innovation in the business provide possibility for quicker achievement of the desired result for sales and in the meantime quicker return ability of the financial funds by means of the realized profit.

In the performed study of the franchising business market in Bulgaria, made by Franchising.bg. (2009)¹, the results show that among the companies at the Bulgarian market, which work by means of franchising, 48% from the franchisees have their investment returned for one year, 31% for two years, 21% for three or more years.

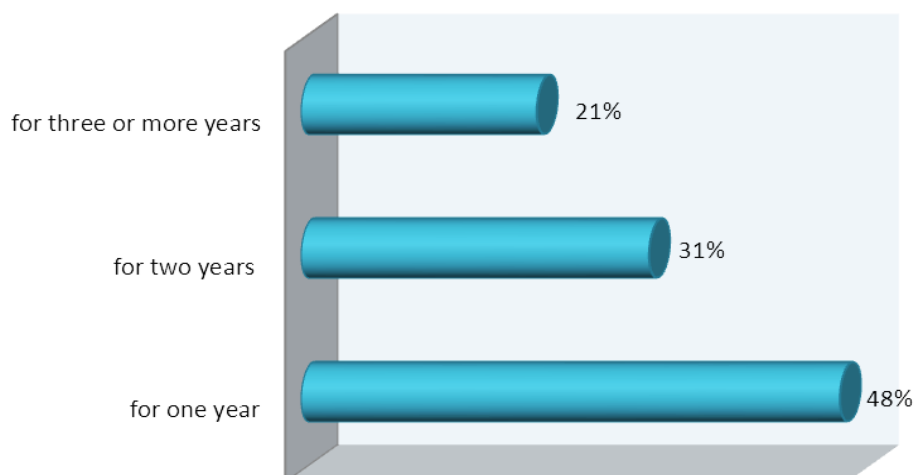


Fig. 1. The investment return using franchisees

¹ The study has been performed by means of filling of questionnaires and phone interviews, as there

have been participating 144 franchiser and 385 franchisees, working at the Bulgarian market.

The practice which Bulgaria has in the use of franchising for development of business, for the people, who are interested and have possibility to purchase franchise rights, are of the following groups:

- Serious entrepreneurs, who have managerial experience, available money funds for investments and interest for developing a new business.
- Second group of entrepreneurs, who make use of the developed business model and apply it directly for starting an additional business.
- Market participants starting new business, who put a stake on the well-known and safe brand, as well as who make use of the offered know-how for managing the business.

- Entrepreneurs directed towards European funding for starting their own business.

By means of this way of co-funding the low budget franchises could quickly turn into national chain of stores. In Bulgaria the average value of the primary franchising fee which is paid once is to the amount of 9,141 EUR.

It is used when opening a new venue for initial marketing researches, advertisement, personnel training, specialized training of the manager, equipment, furnishing etc.

Buying of franchise brands and the development of the franchising are often influence by some of the following factors:

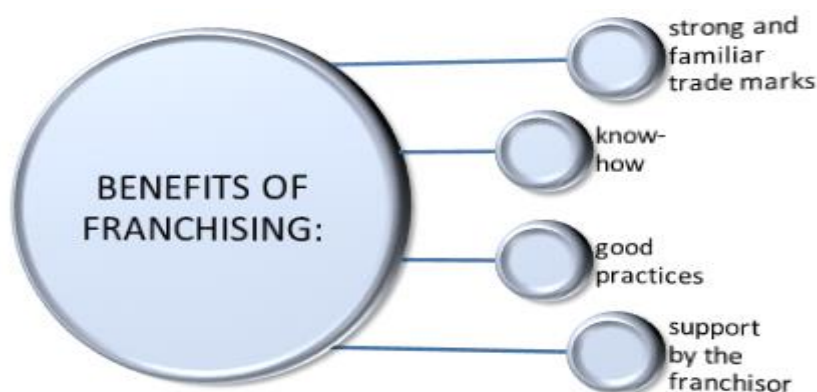


Fig. 2 Factors of influence of franchising

Typical are two main types of franchising depending the forming of the franchising system:

- Primary - one creates a new system for the purposes of the franchising the business.
- Secondary - existing systems are set towards the new business.

In Bulgaria there are great opportunities for development of the franchise business. This is due to the fact that in all economic sectors there could be applied the good franchising practices as one builds national chains for various types of services, including educational ones.

In the present economic situation in Bulgarian the observed increase of the number of franchise business models is made by the ever increasing competitiveness between the enterprises and the manufacturers of certain types of goods and

services, as from significant importance there is the consumers demand and the quality of supply.

The national companies working with franchising are successful in realization of a competitive model for business development as they perform transfer of marketing, management and production technologies, knowledge and experience.

The use of franchising for starting and developing a business making use of the power and the name of the established at the international market brand is proven working and winning model. It is a precondition for certain success especially under the conditions of economic crisis, since it provides possibilities for quick development of the various franchise concepts.

As a result of a scientific research, 55 % of the respondents have bought the franchise because

of the strong brand, 62% of them wanted to be part of the national commercial chain and 75 % have been ready to buy know-how to start a business (Fig. 3). (Anon, 2009)

The franchising has serious potential for development and is appropriate for use in all sectors of the economy, since there are still whole sectors and market niches in Bulgaria, in which no franchise system is working.

The franchising is especially appropriate form of cooperation and sale of business services with

small companies which have capital, but lack enough business experience.

We must not consider the franchising as being used for saving unsuccessful companies, to the contrary - it is a model, by means of which the successful business practices are being multiplied.

The franchising provides the opportunity for quicker entrance to the national and international market. It is one successful business formula in which one combines low risk, quality and strong control.

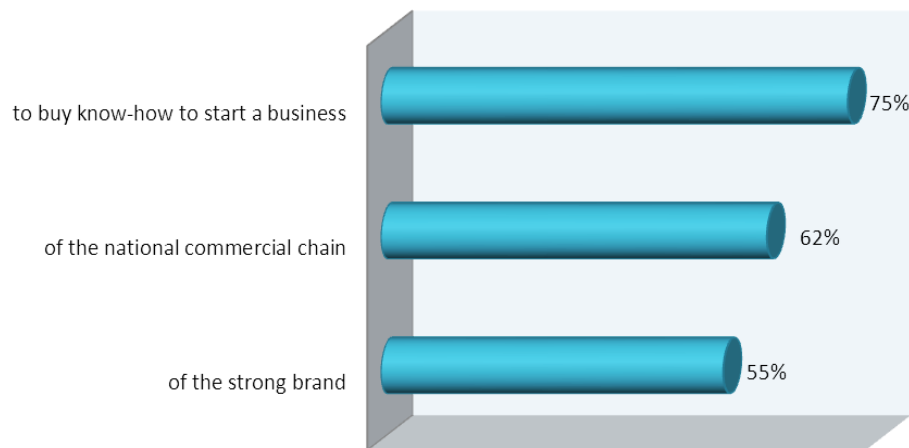


Fig. 3 Opportunities of use of franchising

In contemporary environment of global economic and financial crisis, companies within the transport sector in Bulgaria are experiencing increasing financial difficulties. This gives raise to probability of companies' insolvency and as a result of this their bankruptcy. To avoid these adverse situations, managers should continually analyze and evaluate the degree of financial risk. (Vaisilova, 2013)

To meet the customers' expectations and demands in competitive environment, the company introduced previously unknown forms of activity in the form of significant variety of transport services through specific actions from the management sphere. Lowering the cost of rolling stock in turn led to substantial travel price reductions and increased the quality of services.

Consequently, this resulted in the company's financial results, guided by the criterion of profit, customer satisfaction, and increasing value of its tangible and intangible assets.

The increase of the competitiveness of Bulgaria's economy requires implementation of adequate and rational economic and social policies.

The main objective of the economic policy of Bulgaria is focused on socio-economic integration of the country as an equal member in the EU achieving higher economic growth and increased competitiveness.

The growth, restructuring and stability have to be combined not to oppose them each other.

To improve the quality of life it is necessary to pursue a policy aimed at increasing incomes, the rate of employment, social justice, and free access to education, science and public health system.

Under the condition of a global economic and financial crisis the EU funds are the safest financial instrument. One of the measures to fight against the crisis is to stimulate investments. If you disregard the crisis, the limitation of financial resources leads to the implementation of fewer projects.

On the other hand, if you consider the long-term benefits of investments and their impact on the economy as a whole, they are a necessary and indispensable element that affects economic development of the country.

The professional and rational utilization of these funds will contribute to the socio-economic cohesion of Bulgaria's economy with the

economies of the EU member states. The achievement of good results and high competitiveness will lead to a better life of people.

The economic policy of the state is of essential importance to achieve high competitiveness. The state should create conditions, favorable business environment to increase competitiveness of companies. (Simeonov & Lambovska, 2012)

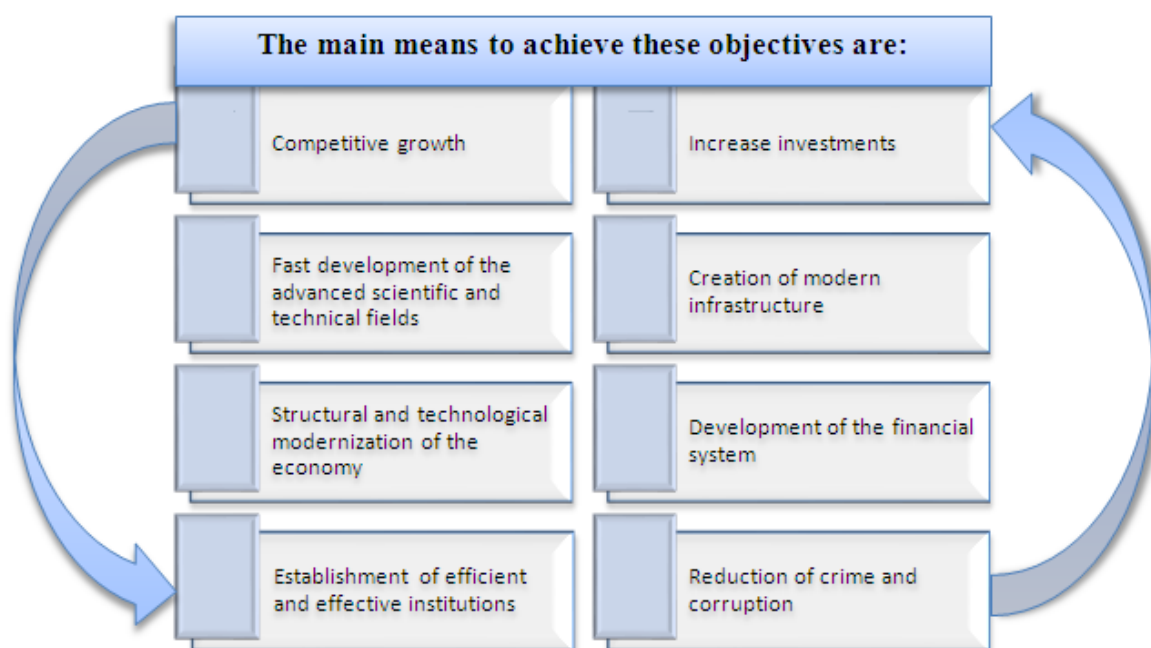


Fig. 4 The main means to achieve high competitiveness

The national productivity directly depends on the productivity of companies. It cannot be competitive without the existence of competitive companies operating in it.

That requires highly-qualified human resources, better information, more modern infrastructure, more intensive competition.

The development of any sector of a modern economy is connected with the balance of resources, production and consumption.

The discovery and use of the possibilities of human capital, innovations, stimulation of investments, competitiveness, modernization and the desire to constantly improve the quality of services offered are the key factors for economic growth.

Besides advantages, of course, the franchise systems have also their disadvantages, which result in conflicts and complicated situations

between the franchisee and the franchisor. Mainly they are related to the know-how. It is very important for the franchisee to strictly follow the good practices of the franchisor.

Sometimes the problems arise from the quality of the services provided. Consequently the choice of an appropriate partner is a determinant factor that influences positively the development of the business and the image of the company.

As a result of the analysis above, franchising could be defined as a successful method for development of every business activity, including the transport activity, as it uses the brand of an approved company.

During the last few years, franchising as a model for development of business activity gets more popular in Bulgaria. This allows Bulgarian companies to be more competitive and to provide services with better quality.

3 CONCLUSIONS

Franchising could also be defined as a sustainable method for the development of the transport sector. The companies that are managed through franchising achieve lower costs and better economic indicators, like higher profits and bigger market shares.

Franchising in the transport sector is a “winning formulae” as it supports the development of intermodal transport services, renewal of rolling stock and employment of qualified personnel which contribute to better development of the company and strengthening of its image.

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ACCOUNTING - A KEY ELEMENT IN COMPANY MANAGEMENT

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Abstract

The modern conditions in which companies conduct their business activities are characterized by dynamics and uncertainty, which stem from the international business environment, formed in recent years, giving rise to transnational economy. However, the main striving of any business organization in its activities is to achieve the most efficient use of resources and meet goals. Realization of the objectives in such an environment can be achieved only by effective, management which is adequate to changes in environment.

Implementation of the general management of the business unit is associated above all with the presence of the necessary information for this activity. The need of information in quantity and quality has changed during the years of economic development of mankind. The more advanced economic development is, the larger range of necessary information becomes for managers to make adequate to environment and efficient for the enterprise managerial solutions. If in the 20s of last century for this purpose achievement accounting information was primarily necessary and enough, nowadays the need of information is undoubtedly beyond confines of accounting data: that is the managerial decision making relies not only on accounting data but also on market information, information about company as a whole (structure, specifics, changes), statistical information, forecast data regarding possible scenarios of business environment changes, etc.

However, regardless of this expanding information needs for enterprise management, the provision of accounting information remains the basis for management decision-making. It shows the current situation, and outlines its place in the sector, and also in the general economic environment. However, it is the basis for making an analysis of various aspects of subsequent planning. This report aims to present accounting and in particular its information product as an intransitive key element in company management. In support of this, the report outlined the place and importance of accounting in the management of company, by analyzing its informative and controlling function.

Keywords: *accounting, management, enterprise management, financial accounting, managerial accounting, accounting information*

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1 INTRODUCTION

Modern conditions at which companies implement their business activities are characterized by



dynamism and uncertainty. These characteristics result from formed in recent years international business environment giving rise to transnational economy. At the same time, the prime objective of any enterprise relating to its activities is the striving of most effective use of resources to achieve goals. Realization of the objectives within such an environment can only be achieved by effective and adequate to changes of business environment management.

In such a scenario, the management can generally be defined as a set of activities impacting on the elements of company in a way that secures achievement of its objectives through effective use of resources (people, equipment, materials, money, information, knowledge, etc) within a changing environment.

Management implementation at all of any business unit is firstly connected with the presence of necessary information and knowledge about this activity. The necessary Information (in quantitative and qualitative terms) has changed during the last years of the economic development of mankind. Evolutionary development of the economy is linked to expansion of the volume and structure of information that is necessary for managers to take adequate to the business environment specifics and effective for the company managerial solutions. If in the 20s of last century for this purpose achievement accounting information was primarily necessary and enough, nowadays the need of information is undoubtedly beyond confines of accounting data: that is the managerial decision making relies not only on accounting data but also on market information, information about company as a whole (structure, specifics, changes), statistical information, forecast data regarding possible scenarios of business environment changes, etc.

In other words, the mankind is witnessing the emergence of information society and formation of information and electronic policy described by the Russian scientist N. Kondratiev in his book "The main economic cycles" in 1925. However, regardless of expanding information needs, the accounting data remain fundamental information in respect of securing effective managerial solutions. Accounting information shows the ongoing economic state of company and outlines

its place within the respective economic sector and business environment in general. At the same time, it is a basis for analysis of various aspects of pany's activity and its further planning. Accounting information represents about two thirds of the total flow of information within a company and is more than fifty percent of entire managerial information. The main sources of accounting information are: financial statements, various reports for fixed assets, claims and liabilities of company, owned securities, participation in the capital of other undertakings, financial performance, exceptional incomes and expenses, etc.

Accounting has always been and obviously will always be a major source of information about business activity of an enterprise and of great importance in making management decisions. As such, it occupies an important place in the overall management system. It would be unthinkable to imagine the functioning of any enterprise without the primary and secondary documents and records, publication of annual financial statements, information about various accounting references, etc. Therefore, the matter related to the analysis of accountancy role and importance for the management of the enterprise is extremely topical.

This report aims to provide the accounting and in particular its information product as a key element in company's management. In support of this, the report outlines the role and importance of accounting in the management of enterprise, by analyzing its information, analytical and control functions.

2 NATURE AND IMPORTANCE OF ACCOUNTING INFORMATION FUNCTION FOR ENTERPRISE MANAGEMENT

To be successful, companies must use their resources properly targeted and relevant, which in practice is achieved with effective business management. From the perspective of management theory, company is a system that contains two major subsystems - managing and managed. The managed system is related to the material flow. As inputs of the managed system are the different types of resources - human,

material, financial. As a result of their conversion a consumer product is obtained which is designed to meet specific needs.

The managing system is connected to the information flow and management cycle. This system gets a variety of information and as a result of its operation, new information is obtained but having another quality. There is a continuous connection between the managing and managed systems in both directions - forward and backward links. This connectivity contribute to the implementation of the management cycle. Management of the enterprise (as a complex process) needs rich and varied information.

Considered in general terms, information is a set of data giving knowledge about facts, events and processes in the world around us. In more specific term (related to artificial systems created by man - as well as company is), information is just a purposeful set of data with cognitive value. If there is no targeted data processing, these data have only potential informational capabilities for company management.

The information which is necessary for the management of economic systems is a result of human labor. It reproduces the subjective perception of individuals about objective reality. This information is internal and external, technical, legal, etc., and especially economic. Within the last mentioned kind of information, the accounting information takes a primary place, not only because of its great coverage, but also because of its specific qualities. In this vein, it could be argued that the information needs of management define the meaning and requirements for accounting information providing. The last determines the timely, objective, true and accurate representation of the financial state and performance of its activity. The accounting information and its further analysis give possibility to manage company's capital.

Well known all over the world is that accounting is the first formal economic knowledge. In its evolutionary development, accounting evolved from ordinary "serving bookkeeping" into a fully built and completed "toolbox of methods and analytical tools". This allows, the immediate ongoing observations to be summarized on the

basis of established principles and leads to forms of thinking and definitions, reflecting the full nature of observed objects (Pergelov, 2005). Accounting is "a scientifically established system for full, continuous, and documentally justified (in monetary terms and in specific ways) reflection of the specific economic phenomena, facts and processes within overall business of the particular company. The aim is to provide economic information for reporting, monitoring, analysis and evaluation of company's activity and for active back impact on it, i.e. for the needs of business management" (Totev & at all, 1987).

In relation to these definitions of accounting several conclusions can be made:

- as a result of application of special methods of accounting, accounting data about overall company's activity and individual economic units are obtained as a final product.
- accounting information is used to analyze and monitor the activities of the enterprise;
- Accounting is deemed from one hand as a standalone system and secondly as a subsystem of the entire management system.

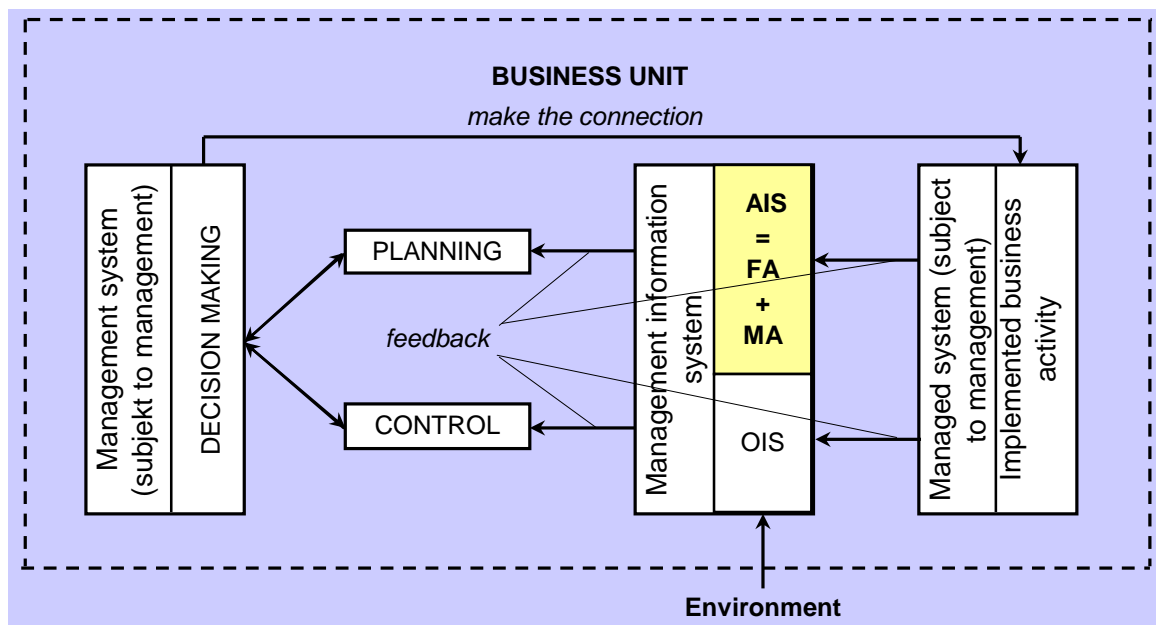
The creation of accounting information has the most cognitive nature. Such a circumstance arises from the fact that the accounting converts the data through its specific, scientifically established methods. This in turn provides a particularly valuable quality of accounting information - its analytical nature. Not surprisingly, some authors note that "this analytical nature is genetically embedded in the evolvement of information process as a whole" (Dinev & Zlatareva, 2012). At the same time, accounting is the system that provides complete and continuous monitoring of the reproduction process in the enterprise, and provides an opportunity for systematic and effective control simultaneously with the registration of economic facts and phenomena. Accounting information system is claimed to be highly organized and together with that informed and knowledgeable.

Accounting information is to a great extend authentic and objectively informed, because it is based on mandatory norm, standards and rules, without being influence by subjective wishes of

managers and its creators – accountants. The latter are legally obliged to observe the credibility and objectivity of the created information. Informative role of accounting information system manifests in the provision of general (according to different criteria) information on various levels of management in the enterprise. In this case the information is created on the basis of already existing accounting data, without application of specific accounting methods. This information is necessary of the various structural units within the enterprise.

Due to these all features, the accounting information has a leading, prominent role in the management of the enterprise. In other words, accounting information is a tool of the

management. It is a significant part of the management information system and an interface between the business and management. In this respect, the statement that "accounting can be seen as a financial center of the management information system". In practice, accounting is a source of two information resources: firstly - statistical data about all accounting items and implemented business operations, and secondly - resultant, effective, analytical information about the same objects and processes. The location of accounting in performance of the management cycle is shown in figure 1. Practically, the feedback between subject and object of the management is implemented through accounting information. It is the basis for prediction of the future development of enterprise and monitoring of its targets.



Legend:

AIS – Accounting Information System
 FA – Financial Accounting

MA – Management Accounting
 OIS – Other Information Sources

Fig.1 Management cycle

Accounting information could be divided into two categories: current and periodic (expressed by the preparation of financial statements). What is typical for this information is that it contains facts that are quantifiable. Monetary Indices are applied to this information that allows comparison with similar economic units within or outside company.

In the competitive and dynamic economic environment within which contemporary companies operate today, the accounting

information is a major factor and resource. The company's ability to organize this information as its key resource and use it as an important competitive advantage is a prerequisite for successful management and prosperity. In this connection it should be noted that the accounting information system (shown in Fig.1) is a combination of two components - financial and managerial accounting. The information generated by the two types of accounting is intended for different stakeholders - owners,

managers, creditors, government agencies, financial analysts, employees. Logically, these stakeholders need different information. The necessary information for external of the company individuals and business structures is provided by financial accounting. For managers, the required information is secured by management accounting. One of the main differences between the two types of accountancy is under the regulatory framework. The information generated by financial accounting is legally regulated and standardized. Managerial accounting creates unregulated and informal information intended only for enterprise management. It is important to note that too often it is based on already established by the financial accounting information.

Accounting information produced by management accounting is extremely important and is needed to make effective management decisions. The latter could be considered as current decisions and predictive decisions. Positive or negative deviations can be assessed by analysis of accounting information created, i.e. based on the performance of a diagnostic accounting analysis. The latter supports managers to use in the most effective manner its financial, material, human and other resources. The diagnostic analysis is directly related to the objectives facing the organization. It supports the definition of the development strategy, measures and guides company's performance. The diagnostic accounting analysis, logically developed into predictive accounting analysis. Thus, the accounting information on the one hand is used for new solutions and on the other hand for assessment of the degree of forecast implementation. Accounting, creating accounting information in practice does not work for itself. This information, as already explained, is designed for the needs of company's management or external users. Given that the main purpose of accounting information is to support company's management this information could be requested to respond to some requirements:

- Timeliness - this requirement is a condition of opportunely creation of accounting information.

- speed and operability - these conditions are related to and interact with timeliness. They stem from the need for managers to monitor changes that occur in the processes and operations within the turnover of assets, equity and liabilities of company;
- reliability - this condition guarantees that the decisions made on the basis of accounting information will affect the results in a positive direction, i.e. information is accurate and does not contain considerable errors.
- flexibility - it is expressed by the ability and capability of accounting to be changed, updated, transformed organizationally and technologically according to the information needed of the management.
- Relevance - it is expressed by the ability to influence on decision-making on the part of the managers, helping them evaluate past, present or future events (and also confirming or correcting their previous evaluations).

Not rarely, from a practical point of view, a balance or compromise between the qualitative characteristics of accounting information is required. Such a balancing act is necessary for managers to achieve their objectives through its decisions. For example, it is too often necessary that accounting information to be rethought and presented in a transformed format to be useful for management. In implementation of certain decisions-making process within any enterprise, the needful information has to be defined. Managers should concentrate on key data from which the decision depends on. The information should be provided as quickly and often as the character of management decisions require. Sometimes situations occur (caused by dynamic economic reality) requiring fast and adequate solutions to specific problems. This implies a really fast providing of necessary information. In this sense, the main requirement to the information is to be timely provided rather than precise, accurate and detailed. In this connection, the so called signaling function of the information turns up which has a significant role and importance in company's management. The implementation of this feature of the present stage of human development is ensured by the use of software for comprehensive management of the business,

called ERP systems. These systems provide the necessary information to management in real time, help to respond quickly and appropriately to changes in the market environment. In practice, they support the realization of one of the main functions of the management - the regulation, which influence the structure, behavior and dynamics of the controlled system and in such a way its dynamic equilibrium is achieved. Researches in this area show that the usage of these business management systems help reducing the costs by about 10% (and increase the revenue with the same dimension). The application of different accounting software turns accounting information into operational information. This is a trend that in the conditions of modern world is accelerating. The current accounting information permanently grows on account of the reduced information about past events.

The cost-effectiveness and benefits of creating managerial information is also of great importance. The usefulness of created information should not exceed the cost of its creation. The amount of information should be optimal, i.e. just to meet the demand of managerial information.

Modern economic environment in which the businesses operate at both national and international level (increasingly growing globalization and increasing competition), continuously increases the requirements for securing of accounting information. He created and recorded accounting information has variable character and has various uses. In some cases, this information is used for an ongoing monitoring of business development and achieved economic results. Therefore, by the usage of accounting information, the influencing factors on the trends of company's development is analyzed. After determination and extrapolation of the extend of their impact, the prognosis about future development of the enterprise becomes possible (i.e. implementation of predictive accounting analysis).

In other cases, the accounting information is used to monitor the business activity - current, preventive or subsequent monitoring.

In all cases, the necessary information for the management of an enterprise is provided mostly by management accounting. Some sub functions of the accountancy which are main functions of the management are inherent to management accounting, namely: analyzing, planning and control.

3 ANALYTICAL, PLANNING AND CONTROL SUB-FUNCTION OF ACCOUNTING IN ENTERPRISE MANAGEMENT

As already mentioned in the previous part of the paper, in terms of the management, the providing of information is the main function of accounting. Along with this basic function, accounting (and especially managerial) has a number of sub-functions supporting the management of the enterprise. The most significant ones are: analytical, planning and control sub-functions. It could be said that they are not absolutely independent, contrary, they influence each other. For example, the analytical function may be regarded as the final stage of the information function. Even there are some opinions that information and analytical functions should be considered as a general information-analytical function. Analytical function in turn is very closely related to the implementation of control functions. Furthermore, the information function provides such an information that is as a basis for realization of control function. Based on the accounting information, the planning of future activities of the enterprise is fulfilled. In this respect, it is said that due to accounting information "the main tasks of a business organization for a longer period of time is defined and necessary economic predictions (and adjustments) are implemented - thus, optimal effectiveness and proportionality of the production process is secured" (Pergelov, Intenzifikatsiyata na narodnoto stopanstvo i usavarshenstvane funktsiite na schetovodnata otchetnost, 2002).

Supporting the main management activities (analysis, planning and subsequent control) is a key priority of the managerial accounting.

Analytical subfunction. In managerial accounting, the analysis of accounting information is done

through various methods and models. Some of them are inherent in accounting science and some are typical of other scientific fields (e.g. certain mathematical, statistical and econometric methods could be applied). The essential thing is that when analyzing the accounting information a resultative information is obtained.

Planning subfunction. Managerial accounting facilitates the planning process and creation of plans for the future, providing information on what products need to be produced and sold, which markets to be used and at what price. This information is important in evaluation of proposals for capital expenditures. Simultaneously, managerial accounting provides data on the performance of past plans. They in turn are essential to design future planning. Managerial accounting develops procedures and regulations relating to the budgeting and coordinates short-term plans for all departments of the company, as well as ensures consistency between them. This is achieved by combining the individual plans into a single plan which within the world economic practice is called Master Budget for the development of the enterprise.

Control subfunction. The process of control is assisted by managerial accounting by reporting on the performance of tasks, comparing actual results to plans for each point of responsibility. Managerial accounting plays an important role in the process of control by focusing managers' attention to those specific activities that do not conform to previously devised common plan. In other words, managerial accounting helps control function, providing accurate measures of activity and identification of bottlenecks. Through managerial accounting, the enterprise

management gains information about specific points, disagreements and controversies in the plans of the various departments and point of responsibility. Not unreasonably, it is argued that managerial accounting is "design" and "tools" of the accounting system and contributes to a better definition and consolidation of relations between the structure of enterprise and accounting system (Trifonov, 2000).

4 CONCLUSION

Management of any business organization requires a rich and varied information about the internal and external environment. Accounting is what affects the course of all business processes, i.e. it gives a clear picture of the internal environment of the company. It reflected all activities, actions and events, even the influence of economic environment over the activities of the enterprise. It is comprehensive to those objects which creates information. It does not create information in general but makes it specific and individualized.

Given those characteristics of accountancy (with main function - informative and sub-functions - analytical, predictive and control) it may be summarized that it is the basis upon which management decisions are made. The quality and effectiveness of decisions will depend on completeness and quality of accounting information. The accounting, by creating its informational product, is an important and inextricable component of the management information system and key element of the system of governance.

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TRANSPORT POLICY IN THE EUROPEAN UNION

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Abstract

Transportation is an important challenge in the territory of the European Union as the organization keeps growing constantly from the original 6 members, concentrated in Western Europe, to a wider organization including East Europe, and soon all the Balkan Region. The big differences in terms of infrastructure among the member states of the EU are a consequence of their different level of development and different recent history as the ex-communist area presents higher deficiencies in terms of transportation. Nevertheless all the members of the European Union need to be connected to each other in order to benefit as much as possible from one of the main pillars of the organization, the Common European Market. If there are no transport connections, there is not integrated market. The development of the transport policy is also influenced by the protection of the environment and the pollution caused by the transport system in terms of emissions and the environmental cost of the infrastructures needed. Hence, the European Institutions have to work in a difficult position taking into consideration all the necessities and possibilities of the member states, promoting those actions to increase the development of connections in the European level, from a wider perspective than the traditional national plans. The success of the European Union in this important field will determine the speed of integration in other areas and the necessity of increasing the links between the member states of the European Union to assure that its benefits reach the whole communitarian territory.

Keywords: *European Transportation, European web road, European train sector, environment and transport, European integration, European territory, European Union, European Common Market.*

1 INTRODUCTION

The transport policy of the European Union has been developed in order to achieve the programmatic targets included in the European treaties. Since the creation of the Common Market in the 50s and the Interior Market by the Single European Act adopted in 1986, free market and

free movement of people and goods became a priority for the Union. Obviously, if the transport among the member states face obstacles, the consecution of a free movement can be just partial. (Damro, 2012)

The Treaty of Rome considered that the six members had such different legislation in this field that could affect negatively the consecution of the Common Market. Accordingly, the Treaty included the creation of a common policy in transport based on two fields, land and rivers, keeping out of the

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Communitarian sphere of influence the transportation by sea and air, which lately have also been developing in the Union from a more cooperative spectrum rather than integration.

The Treaty of Rome targets concerning transport policy were:

1. Common rules for international and Communitarian transportation.
2. Conditions of admission for non-residents
3. Increased security in transports.

The Treaty of Rome, the founding treaty of the European Economic Community, the antecessor of the current European Union, was very ambitious and included several policies to be developed a posteriori, as the Common Agricultural Policy, depending for this further development on the intentions of the member states. Some policies, as the already mentioned CAP were highly important for some member states and their politicians would lead to the full development of the policies. Well known are the efforts of de Gaulle, president of France regarding the CAP. Nevertheless the transport policy at that time lacked the political impetus required for its development, and hence the integration in the field was minimal. The enlargements to the United Kingdom, Ireland, Denmark, and Greece did not change the policy from its stand by position, keeping the transport policy in a limbo. (Ramiro, 2013)

It was in 1985, when the High Court of Justice of the EU issued a court ruling against the non-implementation of the transport policy and encouraged the member states to develop this policy. The Single European Act, a new treaty signed by the members of the European Communities in 1986 meant an important support for the European transport policy as it included a very ambitious plan to achieve a Single Market in the European territory. (Delors, 2013) The previous treaty of Rome included already the creation of a common market, but in reality there were still too many national obstacles to trade and hence the markets were still mainly national with some European connections. Some fields were more integrated than others, as the industrial production or the agricultural sector, but still there was not a real common European market. The SEA pushed for it, but instead of naming it the same and accepted the previous failure; it was

name Interior Market, a real European market. One of the fields that became a priority obviously was the transportation field in order to increase the interconnectivity of the European economies to complement each other and benefit from the free movement of goods and persons. (Van Rompuy, 2012)

Hence the SEA and the Interior Market meant the real beginning of this policy, as a real common market began to be developed.

2 TRANSPORT SECTOR IN THE EU

The transport sector in the European Union shows that at the beginning of integration process in the 50,s, the six member states had 35 vehicles per 1,000 inhabitants, a number that nowadays has increased enormously to more than 400 vehicles per 1,000 inhabitants. The motorization rate, cars per inhabitant, also has grown tremendously, even when the last enlargements of the European Union to Central and East Europe have downgraded the average. The car industry is an important economic sector for the whole European economy, with numerous car brands, selling points, spare companies and an important source of work for the European citizens. The important increased in terms of vehicles per inhabitant in the European Union has meant a growing necessity in terms of transport infrastructures and coordination among the member states of the common area. (Mock, 2014)

The transport industry is also an important economic sector because it represents 10% of the GDP of the Union. The economic importance of the sector is also reflected in the population working directly or indirectly in the sector all over Europe, more than 10 million people.

The sector is also important in terms of energy and environment because it consumes 30% of the energy of Europe and 71% of the oil. It means that its contribution to the environmental problems of European society are important, and also the energy consumed by the sector makes it unsustainable in the long term, as the reserves of oil will start decreasing as the demand for this product will continuously grow. (Eftestøl-Wilhelmsson, 2014)

The transport sector is also important as a receiver of funds from the states, as it represents almost

40% of the investments of the states, an important amount of money mainly dedicated to infrastructures. The expectations for the future are that in 2050 goods transportation will increase by 80% and passenger transportation, by more than 50%. Economic growth needs trade, and commerce needs transport, so it is vital for the Union to improve the transport network system in order to increase the competitiveness of the economic agents of Europe. The poorly connected parts of Europe will not prosper as much as the highly connected ones because they will be practically out of the main routes of trade. The sector had important development in infrastructure in roads and air connections during the '90s, but during the same period of time as key a transport as the train suffered a setback transporting fewer goods than previously. It meant lower investment in this transportation, losing ground compared with road transportation. (Vernygora, 2008)

The transport sector in the '90s experienced an important push from the European Commission, as this European institution was working to fulfill the interior market, and understood the transport sector as a key economic link with the European market. The Commission made different proposals for increasing integration in this important economic sector in order to achieve the interior market:

1. The right of any carrier based in the territory of the Union to transport goods to another member state by road (1993). It meant an important increase in transportation by road between member states, speeding trade in the area of the interior market.
2. The Commission presented a plan interconnecting the national infrastructures (1992). The main reason was the low connectivity of the national systems of transportation because they were thought out and planned from a national perspective. As a common market needs good communication, it is fundamental to improve the links between member states in order to make the free movement of goods easier. After this plan, the European Union still invests huge amounts of money in European projects uniting the different states of the Union. The member states prepare different proposals in this sense, then the Commission

analyses their impact in the interior market and approves those projects with higher impact in terms of integration. The funding of these projects comes from the European budget plus a share from the states involved in the project. (Bollinger, 2014)

3. The Commission worked to develop the railway system, mainly supporting projects leading to free access to the railway net (1996).
4. Sea transportation also was under the surveillance of the Commission, where they established minimal conditions of security, the principle of no discrimination, and minimum standards related with professional and social conditions (1993).

The targets for 2010 were focused on rebalancing the different means of transportation, eliminating bottlenecks in the network, and making a transport policy for the service of the users. Europe had different problems from the predominance of road transportation, as it meant 44% of total goods transportation and 79% of people transportation, when railway just meant 8% and 6%. (EC, 2012)The system was under stress because the congestion created by the fact that 10% of the road system and 20% of the railway net were bottlenecks. The airports were saturated. It was a big danger for the competitiveness of the European economy. Also there were environmental concerns as road transportation generated around 84% of the CO₂ in the transport system in Europe. If it follows this tendency, it will generate more than 50% of all the emissions of Europe by 2020, (Popa, 2014) with consequent harm to the environment. The European Union has worked on these main points, and decreased their negative effects in most of the fields commented on, but still for the next period of time, the targets of the Commission are similar because the problems were not completely solved, so more work in this direction is needed on the European level.

The increase in transport demand is growing, and it is a consequence of the growing number of particular cars; as the incomes of European citizens grow, their necessities change, and the sales of cars increase. The development of economic integration in the Union is also of significance because of the interior market, and

the creation of a European market. It means bigger necessity for transportation between member states. Compared with the USA, where more than 40% of goods transportation is done by railway, or Japan where 30% of people transportation is done by railway, the European Union presents much lower percentages, creating a problem of balance between the different means of transportation. (Tavasszy, 2012)

Rebalancing the means of transportation has become a priority in the Union, promoting free competition between different ways of transportation. The Commission pointed out that the road sector is very much divided among many companies, so the competition is huge, and hence the profits are low, meaning that many companies do not respect security rules to make their services cheaper and their companies more competitive. The Commission reinforced security with more frequent controls and increased monetary amount of fines. It will eliminate the less competitive companies of the sector and will increase transportation by other means, especially rail. The Commission also works supporting the connection between member states and ending the technical differences between member states, unifying them, easing inter-Communitarian connection. (Juul, 2012)

The European Union supports other means of transportation as an effective alternative to road transportation with different programs including the support of river transportation for short distances, creating the so called sea highways. The Marco Polo program provides economic aid to companies changing from road transportation to other means more respectful of the environment.

Air transportation is facing problems in the creation of the single sky in Europe. The sector is 5 times bigger than in 1970 and probably will be twice as big as now in 2020. The Commission wants some kind of coordination in the military field (exclusion areas of flights because of military security concerns), the rights of passengers, and the organization of the sector on a European level. For example, in 2001, the High Court of Justice ruled against agreements between some European states and the USA in the field of passenger transportation and security matters because it broke the unity of the European market, and hence it should have been an agreement

between the European Union and the USA. Nevertheless, air transportation is leading to some common minimum rules. The good implementation of them could lead to deeper integration in this important means of transport in the middle term. (Atasoy, 2013)

European infrastructure and its financing under a program started by the European Commission in 1990 fostered interconnection between member states. There are two main sources financing these projects: European money that comes from financial resources of the Union for the field of transportation, cohesion funds in the case of the states that have access to them, in some cases also money from the European Development Fund, and also loans on good conditions from the European Investment Bank. The second source of money is the national funds that represent the higher percentage of the investment. There were 16 projects working, and just 2 are currently finished, and they were thought to be ready in 2010, but probably will be working in 2025. The need of financial capital is important in these huge projects, and the current crisis does not help as the states have problems in the national accounts. (Pellegrini, 2013)

The new plan of the Commission for the period of 2014-2020 will count on financial funds of 250,000 million euros, and it plans that the projects will be finished in 2030. Its main targets are 83 large European ports connected by rail and road, 37 airports connected by rail with key major cities, 15,000 km of railway lines adapted to high speed and 35 major cross-border projects to reduce bottlenecks. (Alden, 2012) The mechanism 'Connecting Europe' will provide 31,700 million for transport infrastructure for the next funding period 2012-2020; 80% of that money will support the following:

- Main projects priority over the ten runners who compose it. It also will fund a limited number of other projects of high value-added sections on the main network.
- Financing horizontal projects, such as the single air space, or the System Rail Traffic Management in Europe to be used in major transportation corridors.
- The remaining funding can be used for ad hoc projects, including global network projects.

Security is another main concern in European transport policy because of its impact in terms of lives and financial costs. The European Commission can just advise the member states in this field, but integration is needed in order to have common rules to have a more effective policy as transportation is becoming an important part of the European market. (Reggiani, 2013) Security has improved in the fields of air and sea transportation with the creation of a black list of companies that do not follow the minimum standards in security matters; road transportation accounts for most of the deaths, around 50,000 deaths a year, and a loss of 160,000 million, but still the cooperation here is minimal. (Kerikmäe, 2012)

Urban transportation, according to the subsidiarity principle, depends on local institutions, as City Hall, but there is also some European legislation in this field because 80% of the European population lives in cities. Also, the European transport networks are strongly connected with the cities, creating bottlenecks in the system. There are also important environmental concerns because 40% of the CO₂ of transport emissions are generated in urban areas, plus security matters as one third of the mortal accidents happened in the cities. (Farahani, 2013) Here the main objective is increasing collaboration with the local authorities and the inclusion of their policies in the European plans to avoid these major problems.

3 CONCLUSIONS

The future of the transport policy is important for the future of the European Union because a good transport network is a guaranty for the good working of the internal market, and hence for the incomes of European citizens. Also, the transport policy is linked with the safety of citizens, (Mardsen, 2011) as the better infrastructures we

have in Europe, so will the toll of deaths decrease. It is also important in terms of energy, because the European Union imports most of its petrol and gas from other parts of the world, so it creates a dangerous dependency for the Union. In that sense the European Union is promoting the use of alternative energy sources and the more effective use of the existing ones, working closely with the private sector. (Levin, 2012) The EU promotes and partially funds different programs, as for example investigations of car producers for improving the efficiency of motors. New infrastructures are also important for the Union, especially those focused on the interconnection of member states and alternative means of transportation to road transportation. As many states already have good road connectivity between themselves, most of the transport in goods and passengers is done by road. It has negative effects on different matters as energy, environment, and security, caused by the congestion of the European roads, especially in the bottlenecks of the net system, where traffic jams and accidents are common. It means a waste of energy and a waste of lives. So, the European Union is strongly promoting transportation by river and rail to avoid these problems. (May, 2012)

Finally, the actions of the Union include innovation and new technologies in the transportation field as a way to improve the sector and hence the European economy and the conditions of the lives of European citizens. Nevertheless, the economic crisis meant lower income for member states, and less money dedicated to transport policy, especially in terms of infrastructures, as they are very expensive. The states are also very sensitive in this policy in terms of sovereignty, because the control of the national network system is considered a national priority, a fact that blocks deeper integration in so key a sector.

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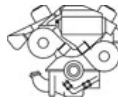
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	Citation is in accordance with the requirements	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Figures	Figures are appropriate	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Tables:	Tables are appropriate	Yes <input type="checkbox"/>	No <input type="checkbox"/>

SECTION III



Please rate it from one of: (1 = Excellent) (2 = Good) (3 = Correct) (4 = Poor)

Originality	
Scientific contribution	
Technical quality of the article	
Clarity of presentation	
Depth of study	

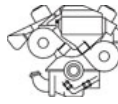
SECTION IV – Recommendations for publication:

(Please select one of the options with an X)

Accept the article "as it is"	
The work requires minor repairs	
The work requires small-scale changes	
The work requires large-scale changes	
The work is good but it is not for publishing in the MEST Journal. It could be published in another journal, for example (make the proposal)	
Work has to be rejected because (please specify particular reason)	

SECTION V: Additional comments

This part of the review is confidential and will be available only to editors of the MEST Journal. If you have any special comment to the editors you can enter it here.



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