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## Section 1. Accounting

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### RESPONSIBILITY ACCOUNTING AND ITS APPLICATION TO VIETNAMESE ENTERPRISES

**Abstract:** Responsibility accounting is considered an useful financial instrument for control and management of business activities by the administrators in their enterprises. Responsibility accounting is more and more important role and position in economic management of the enterprises in various countries of the world, especially in the developed countries. In Vietnam, utilisation of responsibility accounting contents remains a new matter of the enterprises, especially the large-scale enterprises.

**Keywords:** Accounting, Responsibility Accounting, Application of Responsibility Accounting.

#### 1. Basic contents of responsibility accounting

It is said that, the nature of responsibility accounting is to classify and set up the power, responsibility to each division, individual and expense system, output reporting instrument of each division. Responsibility accounting “personalises” the accounting information via personal responsibility on criteria of revenue, costs, profit or investment, etc.

The nature of responsibility accounting is that each division is assigned with specific management power to control, direct and take responsibility for the special tasks under its assigned scope of power. Responsibility accounting is only done in the enterprise with clearly assigned organisation.

– **Responsibility accounting connected to the centres [1, 2, 3].**

Subject to the organisation structure, management hierachical level and objectives of the Administrator, it is divided into corresponding responsibility centres. Each responsibility centre in an organisation has its full right to control its activities such as management of costs, revenues

and investments. The responsibility centres creates the roundabout relation in the management system. Normally, there exist 4 responsibility centres, i.e. Cost centre, revenue centre, profit centre and investment centre. Responsibility centres are formed on basis of struture of management organ and objectives of the Administrator.

*Cost centre:* Responsible for input costs of enterprise. The objective of Cost centre is to minimize the costs. Input of the centre is the criteria reflecting the production factors, such as materials, labor cost, equipment usage, etc and can be measured by different methods. To determine the output of the centre, it is to base on the criteria reflecting production outcomes like the quantity, quality of products, production costs and product price, etc.

*Revenue centre:* This centre often exists in revenue-generating units such as shops, supermarkets, sales divisions, etc. In fact, a pure revenue centre rarely exists. Normally, the management levels often prepare planning and control the actual costs that arise in the revenue centre.

*Profit centre:* Is a centre in which its manager will responsible for both costs and revenues as well as the difference between the input and output which is the profit. As usual, responsibility centre often links to an intermediate management level, however, the manager of this centre can decide all the matters from the strategy to operations of an enterprise. The objective to be implemented by this centre is to maximize the profit. Therefore, the profit centre is not only responsible for the revenue but also for the costs.

*Investment centre:* Is a centre in which its manager will responsible for both revenues, costs and determine working capital as well as decisions on capital investment. The investment centre often represents for the highest management level. The centre manager is responsible for making plans, organising and controlling all the production and business activities in the enterprise.

– **Responsibility accounting linking to determination of assessment criteria** [3, 4, 5].

*CTR (Capital Turnover Ratio):* reflecting management ability of sales based on investment, it is noted that the source of investment (such as debt or owner equity) is not considered as unappropriate.

*ROS (Rate of Return on Sales):* Is the rate of return on sales and recording management capability to control the dissemination between the price and cost. Labor productivity and cost control are reflected in the measurement as the other factors like sale level.

*ROI (Return on Investment)* refers to the previously light reduction, therefore, the managers may not be willing to accept the project if this basic control.

*NIBT (Net Income Before taxes), NIAT (Net Income After taxes), NI (Net income),* Price transferring: in division of dividend, the administrators of different investment centres are encouraged to operate as the separate economic units.

*RI (Residual Income):* Residual income is always increasing if the project objective i.e. ROI exceeds the rate of Capital cost. Residual income was developed from price transferring of ROI.

## 2. Application of responsibility accounting in operations of Vietnamese enterprises

According to the accounting specialists, in the global development and integration trend, those enterprises who want to exist and develop must continuously enhance their capability of management and operative efficiency by using economic management instruments in a harmonious and scientific manner. In such instrument system, responsibility accounting is considered one of the weapons that should be exploited and utilized because of its efficiency. Even, responsibility accounting is evaluated as a “weapon” of the large-scale enterprises, helping them bring full into play the resources in their businesses, thus enhancing the competitiveness.

However, construction of responsibility accounting system remains different in various enterprises, depending on the scale, management requirements and management ability of leadership in such enterprises. Model of responsibility accounting management is often suitable with the large-scale companies and groups with sharp growth rate and in which the leaders believe in power hierarchy to the subordinates, control and management system to work effectively, ensuring a smooth operation of organ. In other words, a useful responsibility accounting system must satisfy a suitable theory, i.e. the most appropriate structure to the operation environment, the general strategy of such organisation and to the value as well as encouragement of the senior administration level [7, 8].

Besides, some other people think that the responsibility accounting may be abused in service of price transferring at the aim of maximizing profit to the enterprise. Accordingly, price transferring is the process transferring the established profits on basis of goods transaction or services within the internal responsibility centres of the Group.

In the consolidated financial statements, internal transactions will be eliminated, inclusive of internal revenues, expenses and profits. However, based on the differences in tax policy, investment preferential policy, customs fees, insurance fees, transportation

fees, import-export fees, etc the flexible price transferring among the responsibility centres will be intentionally “utilized” for the benefit of enterprise.

It is obviously that the responsibility accounting is established to work out the instruments, assessment criteria and guide the managers at division levels to realize general objective of the enterprise. If an enterprise has a clear hierarchy and well knows

to apply the responsibility accounting to their actual operations, it will help such enterprise control and manage its divisions efficiently. Assigning responsibility to specific division and unit will help enhance responsibility of each division and administrator of the responsibility centres, thus making contribution to improving the business efficiency of enterprise in a sustainable manner.

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## **INFORMATION RISK IS A DETERMINING FACTOR IN THE RELIABILITY OF FINANCIAL STATEMENTS**

**Abstract:** The article considers information risk in accounting and financial reporting. The author suggests studying the risk of the user, accountant and IT-technologies. The article summarizes the conditions of occurrence of risk, risk factors, the impact of risk on financial statements, the consequences of risk.

**Keywords:** information risk, warning risk factors, the reliability of financial statements.

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## **ИНФОРМАЦИОННЫЙ РИСК КАК ОПРЕДЕЛЯЮЩИЙ ФАКТОР ДОСТОВЕРНОСТИ ФИНАНСОВОЙ ОТЧЕТНОСТИ**

**Аннотация:** В статье рассматривается информационный риск в бухгалтерском учете и финансовой отчетности. Предложено изучать риск с позиции пользователя, качества подготовки учетной информации и использования ИТ-технологий. Автором уточнены условия возникновения риска, триггеры, степень влияния на финансовую отчетность и возможные последствия.

**Ключевые слова:** информационный риск, признаки проявления информационного риска, достоверность финансовой отчетности.

Информация – основа управления современным бизнесом. Внутренней средой управляемого информационного пространства предприятия является система бухгалтерского учета. На основе процессно ориентированного подхода в бухгалтерском учете накапливается, систематизируется и предоставляется информация в разрезе, необходимом для расчета финансовых показателей и принятия управленческих решений.

Рассматривая факторы искажения финансовой отчетности, особое внимание необходимо уделить именно влиянию информационных рисков на достоверность учета и отчетности.

Термин «информационный риск» сегодня широко употребляется в разных сферах управления бизнесом. В области учета и финансовой отчетности современные ученые и практики трактуют его по-разному. Например, О. В. Харламова определяет информационный риск пользователя финансо-



вой отчетности, который заключается в принятии ошибочного решения на ее основании [6].

В. И. Завгородний настаивает на том, что информационный риск – это вероятность наступления случайного события в информационной системе предприятия, который приводит к нарушению ее функционирования, снижению качества информации ниже допустимого уровня, в результате чего предприятие несет убытки. Д. С. Белоконь, И. В. Федулова отождествляют информационный риск с риском информационной безопасности [1].

В целом, принимая многогранность определения информационного риска, что связано с разнообразием его проявления и последствий, считаем, что создание руководством условий для проявления риска этого типа может носить и преднамеренный характер. Например, заведомо неправдивое отображение показателей доходов для получения кредита; занижение суммы прибыли к налогообложению. По нашему мнению, информационный риск не ограничивается риском пользователя финансовой отчетностью, а имеет более глубокие корни возникновения. Информационный риск в системе бухгалтерского учета предприятия следует рассматривать как вероятность наступления события, которое приостанавливает или нарушает действие принципов финансовой отчетности и качественных характеристик информации в процессе выявления, измерения, регистрации, накопления, обобщения, хранения и передачи информации о деятельности предприятия внешним и внутренним пользователям для принятия решений.

С развитием информационной экономики обострилась проблема идентификации и оценки влияния информационного риска на достоверность финансовой отчетности. При этом важен источник риска, как с точки зрения оценки вероятности проявления, так и исходя из необходимости реализации превентивных мероприятий по его нейтрализации. С целью обоснования существен-

ности влияния информационного риска на достоверность финансовой отчетности, его необходимо рассматривать в разрезе трех составляющих:

- информационный риск пользователя;
- информационный риск подготовки;
- информационный риск профессиональных ИТ-технологий в сфере ведения учета, составления отчетности, представления (передачи) отчетности.

Для каждого вида основополагающими положениями являются уточнение сути и условий возникновения риска, триггеры, общая оценка влияния, последствий, возможности нейтрализации.

**Информационный риск пользователя** – менеджера, который собственно и принимает решения, обуславливается уровнем его профессиональной компетентности. Это риск того, что менеджер (как правило, высшего звена управления) диктует необходимость необоснованного отображения в отчетности завышенных / заниженных показателей прибыли, стоимости ресурсов, собственного капитала, прочих элементов. Условиями для возникновения и развития риска пользователя являются использование приемов недобросовестной конкуренции на рынке, вмешательство в управление бизнесом спонсоров, столкновения для реализации личной выгоды, политика уклонения от уплаты налогов, прочие факторы. Возникновение информационного риска этого вида прямо не связано с системой учета предприятия. Тем не менее, его влияние на достоверность финансовой отчетности значительное.

К сожалению, триггеры информационного риска пользователя проявляются только в ходе процедур независимого экономического контроля. А значит, временной промежуток для развития и накопления риска – значительный. Степень финансового влияния информационного риска пользователя на бизнес определяется штрафными санкциями. За 2017 год органами Государственной Фискальной службы Украины проведено 16,6 тысяч внеплановых проверок, из

них – 6,2 тысяч проверок (37,3%) по инициативе контролирующих органов на основе информации о нарушениях валютного законодательства (4,2 тысячи проверок), недостоверности информации отчетности (1,1 тысяч проверок) [5]. В результате проведенных плановых и внеплановых проверок к субъектам хозяйствования применены штрафные санкции общей суммой 162,3 млн. грн.

Принятие высокой вероятности наступления информационного риска пользователя, к сожалению, не всегда является шагом к его нейтрализации в связи с тем, что условия для развития риска создаются стороной влияния целенаправленно.

**Информационный риск подготовки** – вероятность того, что бухгалтер допустил ошибки и неточности при отображении операций в системе учета. Условиями для возникновения риска являются: частые изменения законодательства, правовые коллизии в вопросах регулирования учета и отчетности, отсутствие инструктивных положений по учету отдельных операций, несвоевременное оформление первичных документов другими должностными лицами (например, материально ответственными лицами, контрагентами), недостаточный профессиональный опыт бухгалтера, отсутствие надлежащего внутреннего контроля и т.д. Признаками, которые идентифицируют факт наступления (проявления) информационного риска подготовки являются «незакрытие» бухгалтерских счетов в конце отчетного периода, не получение «равности трех пар итогов» оборотно-сальдовой ведомости, «зависание» дебиторской задолженности, дублирование операций в учете, отсутствие подтверждающих документов, некачественное оформление документов, которые являются основанием для отображения операции в системе учета и отчетности.

По нашему мнению, информационный риск подготовки следует отнести к наиболее часто проявляемым в системе бухгалтерского учета. Ошибки следует рассматривать как полноцен-

ную составляющую работы с информацией. Тем не менее, при надлежащей организации внутреннего контроля со стороны главного бухгалтера, внутреннего аудитора, степень влияния этого вида информационного риска на финансовую отчетность минимален. Согласно Исследованию современного состояния профессии внутреннего аудитора за 2017 год среди 1892 руководителей разных уровней, лишь 60% руководителей внутреннего аудита оценивают, что их компания эффективно и своевременно реагировала на изменения в нормативно-правовом поле [3, 8]. Таким образом, при недобросовестном исполнении обязанностей службой внутреннего аудита, информационный риск подготовки углубляется и служит основой отображения в отчетности недостоверных показателей. Последствия риска заключаются не только в финансовых убытках в виде штрафных санкций, но и в потере делового имиджа и доверия клиентов.

**Информационный риск профессиональных ИТ-технологий** наименее поддается управлению системой бухгалтерского учета и отчетности. Однако влияние этого вида риска на финансовую отчетность в условиях автоматизации учета и управления значительно. Это вероятность того, что в автоматизированной системе учета и отчетности некорректно отображаются хозяйственные операции (при идентификации этой группы риска, мы исключаем факторы некорректной работы пользователя, которые отнесены ко второй группе риска).

Условиями возникновения и углубления рисков являются несвоевременное обновление (необновление) программного обеспечения, игнорирование необходимости выполнения технических условий при установке программного обеспечения, несвоевременный ремонт и техническое обслуживание компьютерного оборудования, на котором установлено программное обеспечение, отсутствие дифференцированного доступа к учетной информации (паролей пользователей),



«зависание» сервера при отправке финансовой отчетности пользователям, некорректный алгоритм расчета (например, налогов, суммы убытков), недостоверный алгоритм отображения операций на счетах учета и т.п.

Сложность идентификации этой группы рисков заключается в необходимости углубленного понимания бухгалтером технической стороны алгоритма формирования и отображения учетной информации в системе отчетности. Внешними триггерами для бухгалтера является «непроведение» документа, отдельных операций, «зависание» системы, получение пользовательских сообщений об ошибке. Таким образом, влияние этой группы рисков на финансовую отчетность высокое, а инструменты нейтрализации имеют специфическую техническую направленность. Более того, он порождает возникновение ри-

ска нарушения информационной безопасности и конфиденциальности данных. Последний определен как ключевой дестабилизирующий фактор в будущем (на основе Исследования современного состояния профессии внутреннего аудитора за 2017 год) [3, 7].

Таким образом, изучение влияния информационного риска на достоверность финансовой отчетности требует его детализации с позиции пользователя, качества подготовки учетной информации и использования профессиональных ИТ-технологий. Это позволяет идентифицировать условия возникновения риска, степень влияния и возможные последствия. Обоснование путей нейтрализации информационного риска при составлении финансовой отчетности является направлением дальнейших исследований в этой области.

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## Section 2. Mathematical Methods in Economics

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### **USE OF MODEL ABOUT THE DIET FOR CREATION OF A CHILD FOOD IN THE COMPOSITION OF THE IDEALLY APPROACHED TO THE MATERNAL MILK**

**Abstract:** The article presents the current data of scientific research on the composition of breast milk, substantiates the need to use the established chemical composition of breast milk as a reference model to create optimum composition of infant milk mixtures using the diet model and the program 'Search for solutions'.

**Keywords:** mother's milk, model of the problem of diet, nutritional value, caloric content, vitamins, macro – and microelements, infant milk mixtures.

The natural product as a milk is valued due to its content of a large number of nutrients: vitamins, enzymes, fats, and amino acids. This is the main supplier of calcium in the body, which both children and adults cannot do without, and lactose feeds the human brain [1, 3, 6, 7 and 8].

A distinctive and important feature of the drink is its easy digestibility, by virtue of which it is recommended to include it in the diet for children. The only food for the newborn is the mother's milk, which can provide a baby body with all necessary micronu-

trients. Breastfeeding is unique in its nature, because only the mother's milk can provide a baby with the necessary amount of fats, minerals, and vitamins. Although in practice there are no real substitutes for breast milk, all children from time to time are given milk mixtures. In the case of a partial or complete agalactia, artificial feeding, using dry mixtures and other products made based on milk, solves the problem [1, 2, 3 and 4].

The results of breast milk composition studies are the basis for the creation and continuous improve-

ment of infant formula milk composition. Developers of child food seek to justify and develop an adapted infant formula, as close as possible to similar composition of human milk, for children of early age, deprived of the opportunity to receive breast milk. At the same time, it was not always possible to create such mixtures without mathematical methods and information technologies for developers.

The milk mixtures were used about 150 years ago for the first time. At that time, they consisted of dried cow's milk, wheat flour and sugar [2 and 7]. Currently, the composition of infant formula is constantly improving. Many countries of the world (the USA, Germany, Sweden, Finland, Russia, etc.) use technologies for products manufacturing with specified chemical composition (for protein, fat, moisture, etc.), as well as develop food products for children in accordance with modern trends in science and practice. The President of Kazakhstan Nursultan Abishevich Nazarbayev initiated the launch of Kazakhstan's first Plant of the Kazakh Academy of Nutrition 'Amiran' for the production of therapeutic and prophylactic dairy nutrition for children and adults in 2010. Until recently, the main problem of 'Amiran' was the lack of quality milk on the local market: it was necessary to import it from Kyrgyzstan. The raw materials were quite expensive, and the developed infant formula did not bring the expected effect accordingly. At some point, they wanted to close the plant [16].

The biological value of artificial analogues of the milk essentially depends on the chemical composition and sterility of the raw materials used. One of the best solutions is the maternal milk replacement with a similar product of representatives of the animal world: cow's, goat's, mare's, etc. Regular use of this wonderful drink helps to improve a human health, prevent many diseases, and prolongate life [5, 6, 12, 13, 14 and 15].

Numerous studies confirming an indisputable biological advantage and the fundamental irreplacability of natural feeding for the optimal develop-

ment of a baby became a basis for considering mother's milk as a universal model for the infant formula creation [2 and 10].

In this paper, we consider the preparation of a mixture that is close to the maternal milk in composition, mixed with sheep's, goat's, cow's and mare's milk. To do this, we use data on the biological composition of the products in question and we will compose the problem using which it is possible to create a valuable product, ideally approximated to mother's milk using a slightly modified mathematical model of the problem of mixtures.

The work aim is to obtain a mixture containing various nutritional values, vitamins, macro- and microelements in sufficient quantity for all considered types of food elements, similar to mother's milk. The price is also taken into account by means of minimizing the costs of the elements used in the work. We use the theoretical basis of the problem of diet to solve this problem.

Diet is specially selected in terms of quantity, chemical composition, energy value (caloric content) and ways of cooking, as well as dietary regime. In accordance with the diet, it must meet the human needs for essential nutrients (fats, proteins, carbohydrates), as well as the need in essential components (vitamins, micro- and macro elements). They must enter the human body in the optimum amount, which depends on many factors: age, sex, type of work, health status, body weight, etc.

It is believed that there are  $m$  types of products  $P_1, P_2, \dots, P_m$  containing nutrients and irreplaceable components  $B_1, B_2, \dots, B_n$ . The values  $a_{ij}$  are known: this is the amount  $i$  of the nutrient in 100 g of product  $P_j$ . In addition, the  $b_i$  is daily minimum requirement of the organism in  $B_i$  nutrient is known.  $S_j$  and  $e_j$  are also known: it is the cost and energy value of 100 g of product  $P_j$  respectively. All the data will be summarized in the following (table 1).

The optimization problem of a diet can be formulated in two ways.

The first variant is to develop a diet with a minimum cost, which would ensure the minimum daily

human need for nutrients, calculating the caloric content at the same.

The second variant is to calculate a diet with a given caloric content, providing a minimum daily requirement, and then find its cost.

Table 1. – Table for the optimization problem of the diet

Minor substances and indispensable components	Minimum daily requirement	Nutrient content in 100 g of product			
		P <sub>1</sub>	P <sub>2</sub>	...	P <sub>m</sub>
B <sub>1</sub>	b <sub>1</sub>	a <sub>11</sub>	a <sub>12</sub>	...	a <sub>1m</sub>
B <sub>2</sub>	b <sub>2</sub>	a <sub>21</sub>	a <sub>22</sub>		a <sub>2m</sub>
...	...	...	...	...	...
B <sub>n</sub>	b <sub>n</sub>	a <sub>n1</sub>	a <sub>n2</sub>	...	a <sub>nm</sub>
Cost of 100 g of product		S <sub>1</sub>	S <sub>2</sub>	...	S <sub>m</sub>
Caloric content of 100 g of product		e <sub>1</sub>	e <sub>2</sub>	...	e <sub>m</sub>

To solve the formulated problem, we will compile its mathematical model. Define the unknowns and their number. To this end, we denote by  $x_j$  ( $j = 1, m$ ) the volume (liter) of the product  $P_j$  included in the diet. The mathematical model of the problem in the first variant has the following form:

The objective function is to develop a diet with a minimum cost:

$$F(X) = \sum_{j=1}^m s_j x_j \Rightarrow \min,$$

which would provide enough nutrients similar to mother's milk for an infant in all the species in question (in our case,  $b_i$  is the content of  $B_i$  nutrient substance in 100 g of mother's milk):

$$\sum_{j=1}^m a_{ij} x_j \geq b_i, \quad i = 1, 2, \dots, n.$$

Herewith, the caloric content of the diet is:

$$C_k = \sum_{j=1}^m e_j x_j.$$

The natural condition of the products mass fraction included in the diet (in our case, the volume of the baby food being developed, approximating the composition of the mother's milk, i.e. a milk mixture with a mass of 1 kg):

$$\sum_{j=1}^m x_j = 1, \quad \text{where } x_j \geq 0, \quad j = \overline{1, m}.$$

The mathematical model of the problem in the second variant has the following form:

The objective function is to develop a diet with a minimum caloric content, i.e.

$$C_k = \sum_{j=1}^m e_j x_j \Rightarrow \min,$$

providing minimum daily requirements, i.e.

$$\sum_{j=1}^m a_{ij} x_j \geq b_i, \quad i = 1, 2, \dots, n$$

Herewith, the cost of diet is:

$$F(X) = \sum_{j=1}^m s_j x_j.$$

Milk of animals and humans contain more than nineteen kinds of fat and water-soluble vitamins, the level of which varies depending on the season and the ecological situation. Milk is a favorable nutrient medium for various microorganisms' development. Therefore, sanitary and veterinary rules have been approved for agricultural enterprises, strict observance of which contributes to the production of quality milk [12–15].

A detailed chemical characteristic of quality milk various types is given in a number of scientific works [1–10] and in the International Gosstandart [11]. In the laboratory conditions of 'Amiran', the Plant of the Kazakh Academy of Nutrition, [16] the composition of milk is constantly studied and detailed depending on the season of the year. As a result of studying and analyzing these materials, we developed: (Table 2) – Vitamin content, (Table 3)



– Nutritional value and (Table 4) – Macro and trace elements in different types of milk that correspond to the international standard and determine the numerical values of  $a_{ij}$ , the amount  $i$  of the nutrient in 100 g of product  $P_j$ .

As a result of marketing research carried out in the Republic of Kazakhstan, an objective market price of 1 liter of milk was established: mare's milk – 900 tenge, cow's milk – 200 tenge, goat's milk – 320 tenge and sheep's milk – 300 tenge.

Now we are going to compile a mathematical model using the offered diet problem theoretical model.

Let us designate the optimum milk volume (l) in the diet through:  $x_1$  for mare's milk,  $x_2$  for cow's milk,  $x_3$  for goat's milk and  $x_4$  for sheep's milk.

We define the minimum value of the objective function:

$$F(X) = 900 \cdot x_1 + 200 \cdot x_2 + 320 \cdot x_3 + 300 \cdot x_4 \Rightarrow \min$$

Under conditions:

– restrictions on nutritional value:

$$\text{Proteins: } 2 \cdot x_1 + 3,2 \cdot x_2 + 3 \cdot x_3 + 5,6 \cdot x_4 \geq 1,03;$$

$$\text{Fats: } x_1 + 3,25 \cdot x_2 + 4,2 \cdot x_3 + 7,7 \cdot x_4 \geq 4,38;$$

Carbohydrates:

$$5,8 \cdot x_1 + 5,2 \cdot x_2 + 4,5 \cdot x_3 + 4,8 \cdot x_4 \geq 5,00;$$

$$\text{Water: } 89,7 \cdot x_1 + 88 \cdot x_2 + 88 \cdot x_3 + 80,7 \cdot x_4 \geq 85,00.$$

Table 2. – The content of vitamins in different types of milk

Vitamins, mg	in 100 g of milk				
	Mother's milk	Mare's milk	Cow's milk	Goat's milk	Sheep's milk
Retinol (A)	<b>0.04</b>	0.012	0.04	0.068	0.05
Thiamine (B <sub>1</sub> )	<b>0.015</b>	0.03	0.045	0.049	0.048
Riboflavin (B <sub>2</sub> )	<b>0.037</b>	0.03	0.175	0.15	0.23
Nicotinamide	<b>0.18</b>	0.14	0.09	0.187	0.45
Pantothenic acid (B <sub>3</sub> , B <sub>5</sub> )	<b>0.25</b>	0.30	0.35	0.32	0.35
Pyridoxine (B <sub>6</sub> )	<b>0.0007</b>	0.025	0.05	0.017	0.03
Biotin (B <sub>7</sub> )	<b>0.0031</b>	0.011	0.0035	0.0039	0.009
Folic acid (B <sub>9</sub> )	<b>0.004</b>	0.008	0.0055	0.001	0.0054
Cyanocobalamin (B <sub>12</sub> )	0.00004	0.0033	0.000405	0.0001	0.0005
Ascorbic acid (C)	0.0045	0.015	0.002	0.0015	0.0004

Table 3. Nutritional value of different types of milk

Nutritional value	in 100 g of milk				
	Mother's milk	Mare's milk	Cow's milk	Goat's milk	Sheep's milk
Energy value, kcal	<b>70.0</b>	41.0	61.0	66.7	109.7
Proteins, g	<b>1.03</b>	2.0	3.2	3.0	5.6
Fats, g	<b>4.38</b>	1.0	3.25	4.2	7.7
Carbohydrates, g	5.00	5.8	5.2	4.5	4.8
Water, g	85.0	89.7	88.0	88.0	80.7

Table 4. The content of macro- and microelements

	in 100 g of milk				
	Mother's milk	Mare's milk	Cow's milk	Goat's milk	Sheep's milk
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
Macroelements, mg					
Calcium	<b>0.032</b>	0.089	0.113	0.143	0.178
Magnesium	<b>0.003</b>	0.009	0.01	0.014	0.011
Sodium	<b>0.017</b>	0.03	0.043	0.047	0.026



<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
Potassium	<b>0.051</b>	0.064	0.143	0.145	0.198
Phosphorus	<b>0.014</b>	0.054	0.084	0.089	0.158
Microelements, mg					
Iron	<b>0.00003</b>	0.00007	0.00003	0.00001	0.00009
Zinc	<b>0.00017</b>	0.00021	0.00037	0	0.00022

– restriction on the content of vitamins

Retinol (A):  
 $0,012 \cdot x_1 + 0,04 \cdot x_2 + 0,068 \cdot x_3 + 0,05 \cdot x_4 \geq 0,04$ ;

Thiamine (B<sub>1</sub>):  
 $0,03 \cdot x_1 + 0,045 \cdot x_2 + 0,049 \cdot x_3 + 0,048 \cdot x_4 \geq 0,015$ ;

Riboflavin (B<sub>2</sub>):  
 $0,03 \cdot x_1 + 0,175 \cdot x_2 + 0,15 \cdot x_3 + 0,23 \cdot x_4 \geq 0,037$ ;

Nicotinamide:  
 $0,14 \cdot x_1 + 0,09 \cdot x_2 + 0,187 \cdot x_3 + 0,45 \cdot x_4 \geq 0,18$ ;

Pantothenic acid (B<sub>3</sub>, B<sub>5</sub>):  
 $0,30 \cdot x_1 + 0,35 \cdot x_2 + 0,32 \cdot x_3 + 0,35 \cdot x_4 \geq 0,25$ ;

Pyridoxine (B<sub>6</sub>):  
 $0,025 \cdot x_1 + 0,05 \cdot x_2 + 0,017 \cdot x_3 + 0,03 \cdot x_4 \geq 0,0007$ ;

Biotin (B<sub>7</sub>):  
 $0,011 \cdot x_1 + 0,0035 \cdot x_2 + 0,0039 \cdot x_3 + 0,009 \cdot x_4 \geq 0,0031$ ;

Folic acid (B<sub>9</sub>):  
 $0,008 \cdot x_1 + 0,0055 \cdot x_2 + 0,001 \cdot x_3 + 0,0054 \cdot x_4 \geq 0,004$ ;

Cyanocobalamin (B<sub>12</sub>):  
 $0,0033 \cdot x_1 + 0,000405 \cdot x_2 + 0,0001 \cdot x_3 + 0,0005 \cdot x_4 \geq 0,00004$ ;

Ascorbic acid (C):  
 $0,015 \cdot x_1 + 0,002 \cdot x_2 + 0,0015 \cdot x_3 + 0,0004 \cdot x_4 \geq 0,0045$ .

– restriction on the content of macro- and microelements:

Calcium:  
 $0,089 \cdot x_1 + 0,113 \cdot x_2 + 0,143 \cdot x_3 + 0,178 \cdot x_4 \geq 0,032$ ;

Magnesium:  
 $0,009 \cdot x_1 + 0,01 \cdot x_2 + 0,014 \cdot x_3 + 0,011 \cdot x_4 \geq 0,003$ ;

Sodium:  
 $0,03 \cdot x_1 + 0,043 \cdot x_2 + 0,047 \cdot x_3 + 0,026 \cdot x_4 \geq 0,017$ ;

Potassium:  
 $0,064 \cdot x_1 + 0,143 \cdot x_2 + 0,145 \cdot x_3 + 0,198 \cdot x_4 \geq 0,051$ ;

Phosphorus:

$$0,054 \cdot x_1 + 0,084 \cdot x_2 + 0,089 \cdot x_3 + 0,158 \cdot x_4 \geq 0,014.$$

Iron:  
 $0,00007 \cdot x_1 + 0,00003 \cdot x_2 + 0,00001 \cdot x_3 + 0,00009 \cdot x_4 \geq 0,00003$ ;

Zinc:  
 $0,00021 \cdot x_1 + 0,00037 \cdot x_2 + 0 \cdot x_3 + 0,00022 \cdot x_4 \geq 0,00017$ .

– natural condition of mass fractions  
 $x_1 + x_2 + x_3 + x_4 \geq 1,0$ .

Herewith, the caloric content of the diet is:

$$C_k = \sum_{j=1}^m e_j x_j = 41 \cdot x_1 + 61 \cdot x_2 + 66,7 \cdot x_3 + 109,7 \cdot x_4.$$

When solving the problem in the second variant, this function becomes an objective function, i.e. it looks like:

$$C_k = 41 \cdot x_1 + 61 \cdot x_2 + 66,7 \cdot x_3 + 109,7 \cdot x_4 \Rightarrow \min.$$

The first variant solution results in the MS Excel environment using the 'Search for solution' package are shown in (Figure 1).

The optimum value of the required variables is given in the cells: B3, C3, D3 and E3, the diet comprises the mare's milk  $x_1 = 0,23989$  liters or 239,89 ml; cow's milk  $x_2 = 0,29474$  liters or 294,74 ml; goat's milk  $x_3 = 0,11462$  liters or 114,62 ml and sheep's milk  $x_4 = 0,35075$  liters or 350,75 ml. The cost of 1 liter of diet is 416,749 tenge.

Caloric content in 100 g of diet makes 73,937 kcal (Figure 1, cell F28), which is somewhat more than (70 Kcal) caloric content of mother's milk. As it can be seen from this figure, the calculated values of almost all the cells under consideration are much larger than their values in comparison with human milk (in cells H6 to H27), except for fat (F7), retinol (F10) and ascorbic acid (F19) in cells F6 to F27. Their calculated values are equal to the reference values of mother's milk.

	A	B	C	D	E	F	G	H
1	<b>Decision of optimization task about a diet (1- variant)</b>							
2	The required variables	X1	X2	X3	X4			
3	Optimum value	0,23989	0,29474	0,11462	0,35075			
4	Coeff. of the objective function	900	200	320	300	416,749	min	
5	Restriction on elements of nutrients					Contents	Signs	Necessity
6	Proteins, gr	2	3,2	3	5,6	3,731025	>=	<b>1,03</b>
7	Fats, gr	1	3,25	4,2	7,7	4,380000	>=	<b>4,38</b>
8	Carbohydrates, gr	5,8	5,2	4,5	4,8	5,123398	>=	<b>5,00</b>
9	Water, gr	89,7	88	88	80,7	85,847298	>=	<b>85,00</b>
10	Pethinol (A), mg	0,012	0,04	0,068	0,05	0,040000	>=	<b>0,04</b>
11	Thiamine (B1), mg	0,03	0,045	0,049	0,048	0,042912	>=	<b>0,015</b>
12	Riboflavin (B2), mg	0,03	0,175	0,15	0,23	0,156643	>=	<b>0,037</b>
13	Nicotinamide, mg	0,14	0,09	0,187	0,45	0,239384	>=	<b>0,18</b>
14	Pantothenic acid (B3 B5), mg	0,3	0,35	0,32	0,35	0,334567	>=	<b>0,25</b>
15	Pyridoxine (B6), mg	0,025	0,05	0,017	0,03	0,033205	>=	<b>0,0007</b>
16	Biotin (B7), mg	0,011	0,0035	0,0039	0,009	0,007274	>=	<b>0,0031</b>
17	Folic acid (B9), mg	0,008	0,0055	0,001	0,0054	0,005549	>=	<b>0,004</b>
18	Cyanocobalamin (B12), mg	0,0033	0,00041	0,0001	0,0005	0,001098	>=	<b>0,00004</b>
19	Ascorbic acid, mg	0,015	0,002	0,0015	0,0004	0,004500	>=	<b>0,0045</b>
20	Calcium, mg	0,089	0,113	0,143	0,178	0,133480	>=	<b>0,032</b>
21	Magnesium, mg	0,009	0,01	0,014	0,011	0,010569	>=	<b>0,003</b>
22	Sodium, mg	0,03	0,043	0,047	0,026	0,034377	>=	<b>0,017</b>
23	Potassium, mg	0,064	0,143	0,145	0,198	0,143570	>=	<b>0,051</b>
24	Phosphorus, mg	0,054	0,084	0,089	0,158	0,103332	>=	<b>0,014</b>
25	Iron, mg	0,00007	0,00003	0,00001	0,00009	0,000058	>=	<b>0,00003</b>
26	Zinc, mg	0,00021	0,00037	0	0,00022	0,000237	>=	<b>0,00017</b>
27	The condition for mass fractions	1	1	1	1	1,000000	=	<b>1,000</b>
28	<b>Caloric content, kcal</b>	41	61	66,7	109,7	73,937341	>=	<b>70</b>

Figure 1. Results of solving the problem of a diet with a minimum cost

Analyzing the stability report results (Figure 2), we can see that the values of the dual estimates of these elements (fat, retinol and ascorbic acid) are high and constitute 37,95; 4240,05 and 69546,72 respectively. Herewith, ascorbic acid is the most valuable and finding on the verge of the problem acceptable solution. In terms of value, vitamin A (retinol) follows the ascorbic acid, having the value that is almost 16 times less than the one of ascorbic acid. It means that ascorbic acid and retinol are not in excess in these types of milk. In case

of excess of these elements in mother's milk, other ingredients with the necessary content of missing nutrients must be included in the mixture.

The results of solving the problem in the second variant are shown in (Figure 3), and repeat the general picture from the first variant of the solution with some changes. In particular, the optimum composition of the diet included all types of products, but with some difference in value. Comparative results of the problem solution are given in (Table 5).

Cells of variables						
Cell	Name	The final Value	Estimated Cost	Target function Coefficient	Permissible Increase	Allowable Decrease
\$B\$3	Optimum value X1	0,239885798	0	900	1E+30	838,0712424
\$C\$3	Optimum value X2	0,294743369	0	200	134,4843357	1E+30
\$D\$3	Optimum value X3	0,114616333	0	320	617,7934272	108,40553
\$E\$3	Optimum value X4	0,350754501	0	300	523,9198218	150,3885714
Restrictions						
Cell	Name	The final Value	Shadow Price	Limitation Right side	Permissible Increase	Allowable Decrease
\$F\$27	The condition for mass fractions Contents	1	-232,0307712	1	0,075799361	0,009256894
\$F\$6	Proteins, gr Contents	3,731024578	0	1,03	2,701024578	1E+30
\$F\$7	Fats, gr Contents	4,38	37,94925776	4,38	0,472476943	0,687954606
\$F\$8	Carbohydrates, gr Contents	5,123398245	0	5	0,123398245	1E+30
\$F\$9	Water, gr Contents	85,847298	0	85	0,847298001	1E+30
\$F\$10	Pethinol (A), mg Contents	0,04	4240,055948	0,04	0,004992597	0,002930396
\$F\$11	Thiamine (B1), mg Contents	0,042912442	0	0,015	0,027912442	1E+30
\$F\$12	Riboflavin (B2), mg Contents	0,156642649	0	0,037	0,119642649	1E+30
\$F\$13	Nicotinamide, mg Contents	0,239383694	0	0,18	0,059383694	1E+30
\$F\$14	Pantothenic acid (B3 B5), mg Contents	0,33456722	0	0,25	0,08456722	1E+30
\$F\$15	Pyridoxine (B6), mg Contents	0,033205426	0	0,0007	0,032505426	1E+30
\$F\$16	Biotin (B7), mg Contents	0,00727414	0	0,0031	0,00417414	1E+30
\$F\$17	Folic acid (B9), mg Contents	0,005548866	0	0,004	0,001548866	1E+30
\$F\$18	Cyanocobalamin (B12), mg Contents	0,001097833	0	0,00004	0,001057833	1E+30
\$F\$19	Ascorbic acid, mg Contents	0,0045	69546,72281	0,0045	0,001498237	0,001557042
\$F\$20	Calcium, mg Contents	0,133480273	0	0,032	0,101480273	1E+30
\$F\$21	Magnesium, mg Contents	0,010569334	0	0,003	0,007569334	1E+30
\$F\$22	Sodium, mg Contents	0,034377123	0	0,017	0,017377123	1E+30
\$F\$23	Potassium, mg Contents	0,143569752	0	0,051	0,092569752	1E+30
\$F\$24	Phosphorus, mg Contents	0,103332341	0	0,014	0,089332341	1E+30
\$F\$25	Iron, mg Contents	5,83484E-05	0	0,00003	2,83484E-05	1E+30
\$F\$26	Zinc, mg Contents	0,000236597	0	0,00017	6,65971E-05	1E+30

Figure 2. Sustainability Report

Table 5. Comparison of solution results

Milk	Optimum value	
	1 variant	2 variant
Mare's milk, l(ml)	0.240(239.89)	0.243(242.42)
Cow's milk, l(ml)	0.295(294.74)	0.137(137.34)
Goat's milk, l(ml)	0.114(114.62)	0.310(309.89)
Sheep's milk, l(ml)	0.351(350.75)	0.310(310.35)
Total scope of the diet, l(ml)	1.000(1000)	1.000(1000)
Diet cost, tenge	416.749	437.918
Caloric content in 100 g, kcal	73.937	73.032

	A	B	C	D	E	F	G	H
1	<b>Decision of optimization task about a diet (1- variant)</b>							
2	The required variables	X1	X2	X3	X4			
3	Optimum value	0,23989	0,29474	0,11462	0,35075			
4	Coeff. of the objective function	900	200	320	300	416,749	min	
5	Restriction on elements of nutrients					Contents	Signs	Necessity
6	Proteins, gr	2	3,2	3	5,6	3,731025	>=	<b>1,03</b>
7	Fats, gr	1	3,25	4,2	7,7	4,380000	>=	<b>4,38</b>
8	Carbohydrates, gr	5,8	5,2	4,5	4,8	5,123398	>=	<b>5,00</b>
9	Water, gr	89,7	88	88	80,7	85,847298	>=	<b>85,00</b>
10	Pethinol (A), mg	0,012	0,04	0,068	0,05	0,040000	>=	<b>0,04</b>
11	Thiamine (B1), mg	0,03	0,045	0,049	0,048	0,042912	>=	<b>0,015</b>
12	Riboflavin (B2), mg	0,03	0,175	0,15	0,23	0,156643	>=	<b>0,037</b>
13	Nicotinamide, mg	0,14	0,09	0,187	0,45	0,239384	>=	<b>0,18</b>
14	Pantothenic acid (B3 B5), mg	0,3	0,35	0,32	0,35	0,334567	>=	<b>0,25</b>
15	Pyridoxine (B6), mg	0,025	0,05	0,017	0,03	0,033205	>=	<b>0,0007</b>
16	Biotin (B7), mg	0,011	0,0035	0,0039	0,009	0,007274	>=	<b>0,0031</b>
17	Folic acid (B9), mg	0,008	0,0055	0,001	0,0054	0,005549	>=	<b>0,004</b>
18	Cyanocobalamin (B12), mg	0,0033	0,00041	0,0001	0,0005	0,001098	>=	<b>0,00004</b>
19	Ascorbic acid, mg	0,015	0,002	0,0015	0,0004	0,004500	>=	<b>0,0045</b>
20	Calcium, mg	0,089	0,113	0,143	0,178	0,133480	>=	<b>0,032</b>
21	Magnesium, mg	0,009	0,01	0,014	0,011	0,010569	>=	<b>0,003</b>
22	Sodium, mg	0,03	0,043	0,047	0,026	0,034377	>=	<b>0,017</b>
23	Potassium, mg	0,064	0,143	0,145	0,198	0,143570	>=	<b>0,051</b>
24	Phosphorus, mg	0,054	0,084	0,089	0,158	0,103332	>=	<b>0,014</b>
25	Iron, mg	0,00007	0,00003	0,00001	0,00009	0,000058	>=	<b>0,00003</b>
26	Zinc, mg	0,00021	0,00037	0	0,00022	0,000237	>=	<b>0,00017</b>
27	The condition for mass fractions	1	1	1	1	1,000000	=	<b>1,000</b>
28	<b>Caloric content, kcal</b>	41	61	66,7	109,7	<b>73,937341</b>	>=	<b>70</b>

Figure 3. The results of solving the problem of a diet with a given caloric content

As we can see from the (Table 5), the goat's milk in the optimum diet is 0.196 liters less in the first variant in relation to cow's milk and it is 0.158 liters more than in the second variant. This led to an increase in the cost of 1 liter of diet in the amount of 21,169 tenge. Significant differences in other indicators can be ignored, but still the best result was obtained in the first variant the problem solution. It's less expensive and caloric content of the diet is higher.

Thus, the optimum solution is presented for the considered example, which can be explained as follows: mixing the mare's milk with  $x_1 = 0,240$  liters or 239,89 ml; cow's milk  $x_2 = 0,295$  liters or 294,74 ml; goat's milk  $x_3 = 0,114$  liters or 114,62 ml and sheep's milk  $x_4 = 0,351$  liters or 350,75 ml we get a mixture that is not inferior and even surpasses mother's milk, due to the presence of more than 21 elements of nutrition.



**Conclusion.** This work shows the wide possibilities of working with the package 'Search for solution' in the MS Excel environment. The result of this study is the development of an ideal plan for a children diet taking into account, on the one hand, the minimum cost of food, and on the other hand, the caloric content of the diet.

These calculations can contribute to the creation of infant formula that is relatively affordable and ideal in composition of food items, as it contains natural products that are of great value for a children health. The infant formula can be manufactured in biological laboratories, without large expenditures of money. Similarly, it is possible to obtain numerical solutions of the optimum composition of nutritional value all types, vitamins, macro- and microelements of nutrition, taking into account the change in the composition of milk depending on the season of the year, the results of

which can be useful to scientists and technologists of the relevant food industry.

Currently, the development of science has advanced and new data on the composition of mother milk can continuously improve the composition of infant formula, the main principle of which is now to maximize their composition to the composition and properties of mother milk, as well as the compliance of the mixture with the digestive and metabolic characteristics of the first year of child life.

At present, the offered method for the development of infant formula has been transferred to 'Amiran Plant of the Kazakh Academy of Nutrition' LLP, Almaty, Chimbulak village, for manufacturing application, where a post-registration clinical trial of the developed infant formula has been launched. To date, this plant has been the first and only in Kazakhstan to produce baby infant formulas made from natural whole milk of the highest quality.

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## Section 3. Management

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### THE CONCEPT OF QUALITY AND ITS ROLE IN ENSURING THE COMPETITIVENESS OF PRODUCTS AND SERVICES

**Abstract:** approaches to the definition of quality and its role in the organization of economic activity are examined. Particular attention is paid to the PDCA cycle.

**Keywords:** quality, quality management system, closed loop management, the PDCA cycle.

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### ПОНЯТИЕ КАЧЕСТВА И ЕГО РОЛЬ В ОБЕСПЕЧЕНИИ КОНКУРЕНТОСПОСОБНОСТИ ПРОДУКЦИИ И УСЛУГ

**Анотация:** рассматриваются подходы к определению качества и его роли в организации хозяйственной деятельности. Отдельное внимание уделяется циклу PDCA.

**Ключевые слова:** качество, система менеджмента качества, замкнутый цикл управления, цикл PDCA.

По мере развития национальных экономик, все больше внимание уделяется качеству продукции и оказываемых услуг. Качество является неотъемлемым фактором конкурентной борьбы, обеспечивающей экономическое преимущество хозяйствующему субъекту. Оно включает в себя полезность продукта или услуги, выраженное в эргономических, эстетических, технических и других свойствах. Причем низкий уровень качества может наносить ущерб национальной экономике и напрямую влиять на уровень жизни населения.

Функционирование организации в условиях рынка и жесткой конкуренции вынуждает постоянно совершенствовать технологические процессы, применяемые в производстве благ. При этом, рост качества благ, является реакцией на сигналы потребителей, которые могут поступить в случае узнаваемости и отсутствия отрицательного имиджа у торгового бренда. Конкурентоспособность определяется совокупностью качественных и стоимостных характеристик блага, которые нацелены на удовлетворение потребностей покупателя.

Причем, наивысшая конкурентоспособность, соответствует наивысшей полезности в расчете к суммарным затратам на приобретаемое благо.

Сегодня страны активно интегрируются в мировую хозяйственную систему. Данная интеграция проявляется не только по продвижению товаров на мировой рынок, но и в продвижении услуг, в том числе и образовательных. Практически каждая организация сталкивается с ростом конкуренции, повышении сложности технологических процессов, сокращением инновационных и технологических циклов. В связи с этим на рынке функционируют только те организации, блага которых максимально полностью удовлетворяют предпочтениям потребителей.

Можно выделить два понятия. Первое – «конкурентоспособность организации», второе – «конкурентоспособность блага». Под конкурентоспособностью блага, можно понимать, совокупность качественных, стоимостных и иных характеристик, которые соответствуют определенным предпочтениям потребителей и выгодно отличаются от аналогичных свойств иных благ. При описании конкурентоспособности блага, применяется сравнительный анализ его совокупных характеристик и характеристик благ конкурентов, которые, как правило, учитывает стоимость потребления и степень удовлетворения конкретных потребностей.

Под конкурентоспособностью организации, можно понимать, способность организации эффективно использовать свой финансовый, производственный и трудовой потенциал, с целью выпуска конкурентоспособных благ. Высокой конкурентоспособностью, исходя из этих определений, обладают новые виды товаров, или новые формы и способы оказания услуг.

Исторически понятие качества включает в себя аспекты от подхода по дифференциации по шкалам «плохой» – «хороший», до формирования маркетинговых концепции. Первично понятие качества носило сугубо философский

характер: благо перестает быть само собой, когда оно теряет свое качество. Сейчас же качество это свойство блага удовлетворять фактические и скрытые потребности потенциального покупателя. Качество отражает взаимоотношение основных элементов объекта, которые характеризуют его специфику.

Словарь русского языка дает следующие трактовки понятия «качество»:

1. качество – это существенный признак, свойство, отличающее один предмет или одно лицо от другого;

2. качество – это степень достоинства, ценности, пригодности вещей, действий и т.п., соответствие тому какими они должны быть;

3. качество – это существенная определенность предмета, явления и процесса, в силу которой он является данным, а не иным предметом, явлением или процессом.

На основании указанных трактовок понятия «качества» можно сформулировать следующее определение качества: качество – это некоторая характеристика, определяющая социально-экономическую особенность объекта, и его отличительные свойства. При этом, социально-экономическая категория, с одной стороны, является совокупностью существующих характеристик, обусловленных показателями, определяющими потребительскую полезность, с другой стороны, отражает мнение потребителя о благе.

Понятие «качества», можно рассматривать в четырех аспектах: правовой, экономический, социальный и философский. В качестве правовой категории, качество, может быть определено, как соответствие совокупных свойств объекта установленным нормативным документам. Как экономическая категория, качество можно определить, как совокупность характеристик объекта позволяющих максимизировать прибыль от его реализации. Социальный аспект качества реализуется в свойстве объекта удовлетворять потребности населения. Качество, как философскую

категорию, можно определить, как существенное назначение объекта, в силу которого он является данным.

Учитывая, что качество является комплексной категорией, отражающей эффективность всей деятельности организации, можно выделить предметное качество, т.е. качество конкретного блага и его способность удовлетворять ту или иную потребность и функциональное качество, т.е. уровень удовлетворения потребностей независимого спроса.

В стандарте ISO 9000: 2015, отражены следующие положения по вопросу «понятие качество» [1]:

1. Организация, ориентированная на качество, поощряет культуру, отражающуюся в поведении, отношениях, действиях и процессах, которые соз-

дают ценность посредством выполнения потребностей и ожиданий потребителей и других соответствующих заинтересованных сторон;

2. Качество продукции и услуг организации определяется способностью удовлетворять потребителей и преднамеренным или непреднамеренным влиянием на соответствующие заинтересованные стороны;

3. Качество продукции и услуг не только включает выполнение функций в соответствии с назначением и их характеристиками, но также воспринимаемую ценность и выгоду для потребителя.

Таким образом, стандарт исходит из того, что качество объекта, определяется его потребительскими свойствами, что является естественным. Логику понятия, качества, отраженную в стандартах, можно представить в виде схемы (рисунок 1).

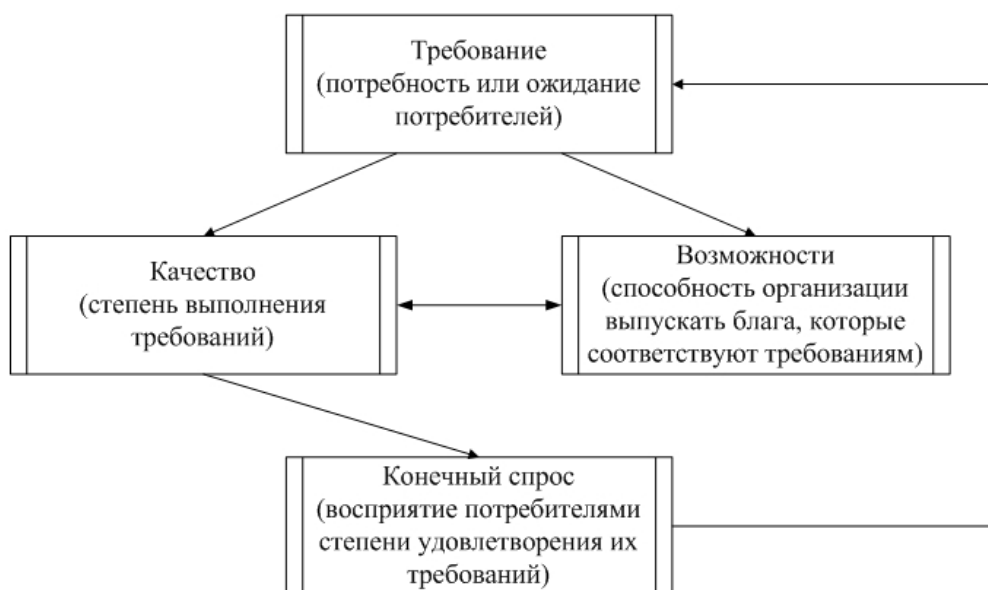


Рисунок 1. Схема соотношений основных понятий связанных с понятием «качество»

Все существующие трактовки качества можно объединить в пять групп [2]:

1. понятия раскрывающие сущность качества как абсолютной оценки. Данная группа понятий рассматривает качество как абсолютный, не измеряемый признак блага;

2. понятия раскрывающие сущность качества как свойство продукта. Эти понятия рассматри-

вают качество как производную от какой-либо измеримой характеристики продукта, чем выше характеристика, тем выше качество;

3. понятия раскрывающие сущность качества как соответствие продукта его стоимости, т.е. качество, определяется как соотношение стоимости продукта и его полезности (продукт полезен и дешевле аналога);

4. понятия раскрывающие сущность качества как соответствие продукта назначению, т.е. возможность продукта или услуги выполнять свои функции (пригодность для применения);

5. понятия раскрывающие сущность качества как нормы соответствия стандартам, т.е. соответствие объекта техническим условиям и заданиям, включающим целевые значения характеристик объекта.

В современной литературе, в качестве обобщения действия по формированию качества объекта применяется понятия «менеджмент качества» и «система менеджмента качества».

На основании формулировок понятия «система менеджмента качества», представленных в стандарте ISO 9000: 2015, можно выделить следующие аспекты:

1. система менеджмента качества – это набор действий, с помощью которых организация определяет свою миссию и цели, процессы и ресурсы,

необходимые для достижения желаемых результатов;

2. система менеджмента качества – это совокупность действий нацеленных на управление взаимодействующими процессами и ресурсами, требуемые для формирования ценности получаемых результатов;

3. система менеджмента качества – это система, позволяющая руководству организации оптимизировать используемые ресурсы, с учетом последствий, принимаемых ими решений;

4. система менеджмента качества – это совокупность средств управления, применяемых при идентификации действий совершаемых в отношении преднамеренных или непреднамеренных последствий при предоставлении продукции и (или) услуги.

Общая схема, отражающая сущность понятия «система менеджмента качества», может быть представлена графически (рисунок 2).



Рисунок 2. Схема отражающая сущность понятия «система менеджмента качества»

Рассмотрим составные элементы. Планирование качества, является составным элементом системы менеджмента качества направленное на формирование целей в области качества, определение необходимых процессов и выделение соответ-

ствующих ресурсов для реализации этих процессов и достижения их целей. Управление качеством выражается в подготовке и внесении в план по качеству показателей позволяющих оценить результаты деятельности организации, а также мониторингу



этих показателей. Обеспечение качества – это совокупность мероприятий по формированию уверенности в том, что объект будет соответствовать заявленным требованиям. Улучшение качества, данный элемент системы менеджмента качества определен цикличностью деятельности организации.

Такой замкнутый цикл управления известен как цикл PDCA (Plan-Do-Check-Act, планирование – выполнение – контроль выполнения – воздействие) или цикл Деминга. Методология PDCA представляет собой простейший алгоритм действий руководителя по управлению процессом и достижению его целей. Цикл управления начинается с планирования.

Планирование – установление целей и процессов, необходимых для достижения целей, планирование работ по достижению целей процесса и удовлетворенности потребителя, планирование выделения и распространения необходимых ресурсов. Выполнение – выполнение запланированных работ. Проверка – сбор информации и контроль результата получившегося в ходе вы-

полнения процесса, выявление и анализ отклонений, установление причин отклонений. Воздействие (управление, корректировка) – принятие мер по установлению причин отклонений от запланированного результата, изменения в планировании и распределении ресурсов.

Цикл PDCA лежит в основе управления любой деятельностью, т.е. применим как к процессу в целом, так и к отдельным работам, входящим в состав процесса. Цикл может быть применен к самому себе. Например, если применить цикл PDCA к его же части Act – корректировка, то получится следующая схема пошагового управления: Plan – планирование, разработка корректирующих действий на основе проведенного анализа отклонения. Do – выполнение, внедрение корректирующих действий. Check – проверка результативности (эффективности) корректирующих действий. Act – проведение анализа причин неудачного устранения причин отклонения и принятия решения о разработке (или не разработке) новых корректирующих действий.

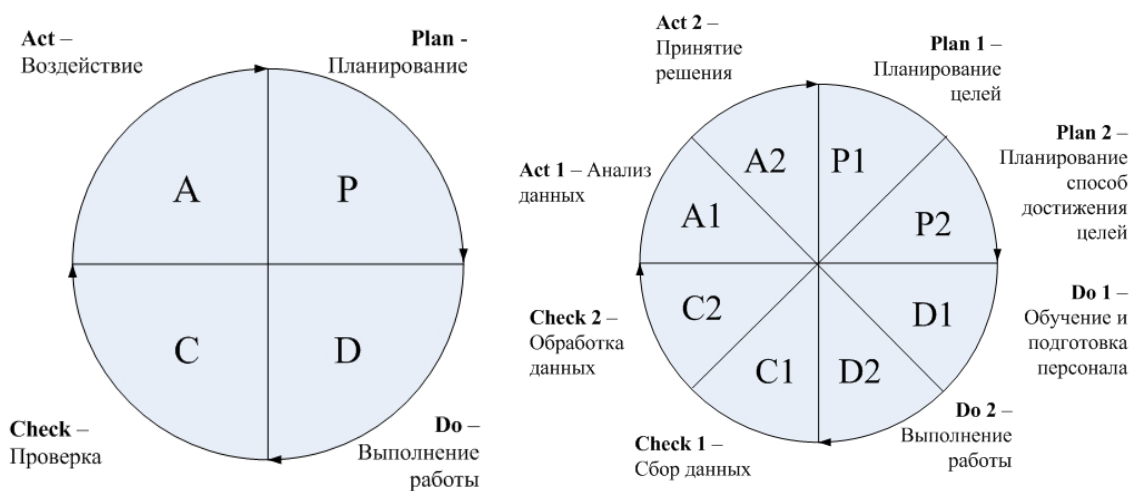


Рисунок 3. – Два варианта цикла PDCA

В практической деятельности цикл PDCA применяется многократно с различной периодичностью. При выполнении основной деятельности цикл PDCA применяется с периодичностью циклов отчетности и планирования. При выполнении корректирующих действий длительность

цикла PDCA может быть меньше или больше длительности цикла отчетности и планирования и устанавливается в зависимости от характера, объема, длительности и содержания мероприятий по устранению причин отклонений.

Иногда в цикле PDCA каждый шаг разбивают на две части (рисунок 3).

Plan – на планирование целей (Plan 1) и планирование способов достижения целей (Plan 2). Do – на обучение и подготовку персонала (Do 1) и собственно выполнение работы (Do 2). Check – на сбор данных (Check 1) и обработку данных (Check 2). Act – на анализ данных (Act 1) и принятие решений (Act 2).

В заключение следует отметить, что разнообразие подходов в трактовках категории «качество» объясняется:

1. разнообразием объектов качества и сложностью данной категории;
2. различиями в подходах при восприятии объекта потребителем в процессе определения его полезности.

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## **FAMILY BUSINESS: A COMPARATIVE ANALYSIS OF CONDITIONS IN LEBANON AND THE USA**

**Abstract:** The article presents a review of the research devoted to the family business in the Lebanese Republic and the United States. The main trends and directions of modern research are revealed. The specifics of the transformation of social and economic processes in the Lebanese Republic, connected with the confessional specificity of the state, are analyzed.

Used methodological approaches and methodological tools in the Lebanese and foreign studies of the family business. Conclusions are made about increasing the scientific and practical interest of modern researchers to the problem of gender inequality and institutionalizing the mechanisms of continuity of the family business and building an effective organizational culture in family companies.

**Keywords:** family business, women in the family business, gender inequality in the family business, features of business inheritance.

### **Introduction**

Comparative analysis of the conditions of inheritance and family business in the United States and the Lebanese Republic at the present stage is an important subject of sociological research, as well as an urgent issue of reforming the social and economic policies of the countries studied.

The reform of a number of legal provisions and traditional conditions regulating this sphere in Lebanon, contain the specifics of a new model of social and legal public administration. The reforms carried out represent the practical activities of the state authorities, which consist in finding out the problems of running a family business in Lebanon and developing tools for their solution, expressed in the creation of normative legal acts regulating the social and economic development of the state.

Therefore, in this article, using the method of comparative analysis, current laws and the main problems of creating favorable conditions for conducting family business in the Lebanese Republic will be examined. Of particular importance in the

study is the evolutionary nature of the American family business inheritance model, because, due to recent trends, the US is the world leader in its economic development and business prospects, which is undoubtedly determined by the innovative approach to reforming the country's socioeconomic and legal system. At the same time, general conclusions on the transformation of social processes in the field of family business in the Lebanese Republic have been made in the work, since the choice of effective organizational and legal mechanisms requires complex system assessments of social processes aimed at solving the problems of various spheres of family business. Therefore, a study of the ongoing and developed for the future transformation of the conditions for conducting family business in both countries is of great importance. Main part. Family business represents a special type of organization with many features related to the influence of informal kinship relations on managing economic processes, the family business has a number of structural problems that are especially acute in the devel-

opment process. Considering the family business, it is necessary to understand that the family enterprise is an enterprise founded by family members with the aim of generating income and its further development. A large number of foreign studies are devoted to the development of approaches to the definition of a family business and the identification of its differences from a non-family business.

An important consideration is given to the analysis of market strategies for the development of family enterprises. Scientists rightly point out that the majority of conflicts that impede the effective development of the family business arise with respect to the policy of continuity, the interaction of parents and children, the problems of family control and the distribution of roles in the family business in terms of differentiating the roles of family members and employees in the family business. Particular attention is paid in a number of studies to the study of the specifics of the organizational culture and ethical values of the family business. One of these concepts is the analyzed concept of emotional possession, which assumes the role of motivating future generations to participate in the continuation of the family business through an early professional and value orientation.

Entrepreneurial teams of the family business with a high level of general organizational experience and a low level of functional differentiation made it possible to reveal the highest level of internal consistency and the importance of the uniqueness of human resources. This suggests that a strong relationship between team members can be a more important element in the success of both family and non-family businesses than the overall skill set of team members.

Although the potential for conflict of relations between members of the business team is not high, a team consisting of members of a family of different generations does not guarantee peace of mind.

Prospects for the development of the family business were investigated. According to the researchers, the dynamics of the development of the family business and the nature of entrepreneurial activity, re-

gardless of the number of years since the foundation, are based on the process when the participants of the next generation involved in the family business challenge the management of the family business by the current generation or the generation of the founders.

At the same time, the pace of development of entrepreneurial activity can be reduced when three or more generations become involved in the family business in conditions of lack of a common vision, low level of trust and potentially other concepts of understanding family management, that is, the effectiveness of entrepreneurial activity in the family business depends on the number and diversity of skills and approaches of the management team within the limits of reasonable sufficiency. In the context of the research, Heather Haberman and Sharon Danes "Father-Daughter and Father-Son Family Business Management Transfer Comparison: Family FIRO Model Application", describing the authority structures "father-son" and "father-daughter" in the transfer of business. The authors identified several types of potential research: 1) inclusion of the second generation in the family business; 2) control of the business management process; 3) the integration of heirs into business management. The whole study focuses on the adaptation of women in the system of doing business. According to scientists, daughters, their excluded systems of inheritance of the right to run a family business, feel restrained. As a result, this leads to isolation of family members and the emergence of interpersonal conflicts. The problem of including women in the family business is especially acute in Arab countries, where the prevailing religion is Islam.

The development of the theory of family business and family business in Lebanon, theoretical studies devoted to the family business, are just beginning, and this phenomenon is currently under study. Taking into account the fact that the family business develops and transforms under the influence of external factors (social and economic policy of the state, traditions, cultural and domestic characteristics, etc.) and internal factors (the social status of the

family, personal relationships, status of heirs, etc.) conditions of doing business is quite difficult. With a change in historical, political, social and demographic factors, the family as the basis of entrepreneurial relations remains the most closed and informational non-transparent economic system. That is why both in the foreign and in the Lebanese statistics, the family business was not studied in the complex.

The study of the characteristics of inheritance and the conduct of the family business is a multidisciplinary problem area, which differs substantially from its related disciplines with an exclusive focus on the social and legal paradoxes caused by the family's involvement in business. The overall goal of this field of research is to build knowledge about one particular type of organization – family enterprises, as the oldest specialized form of doing business in the world. In this form of business, the functional imposition of the family and production system is such that family members significantly influence the key decisions and directions of the enterprise development.

Analyzing the specifics of the conditions of inheritance and conducting family business in Lebanon and the USA, it is very important to analyze their features. The basis of the criteria analysis is the entire complex of ongoing social transformations, financial and budgetary policies, as well as general trends in the transformation of existing regulatory legal acts. The family business is ranked from small and medium to conglomerates that operate in millions in different industries and countries. Famous family firms include: Salvatore Ferragamo, Benetton and Fiat Group in Italy; L'Oreal, Carrefour Group, LVMH and Michelin in France; Samsung, Hyundai Motor and LG Group in South Korea; BMW and Siemens in Germany; Kikkoman and Ito-Yokado in Japan; Ford Motors Co and Wal-Mart Stores in the USA. Practice shows that most family businesses do not exist long after the founder's death. As a rule, about 95% of enterprises are closed by the third generation. This is due to the fact that the family is expanding, and subsequent generations do not always understand the essence of doing business, as its founders.

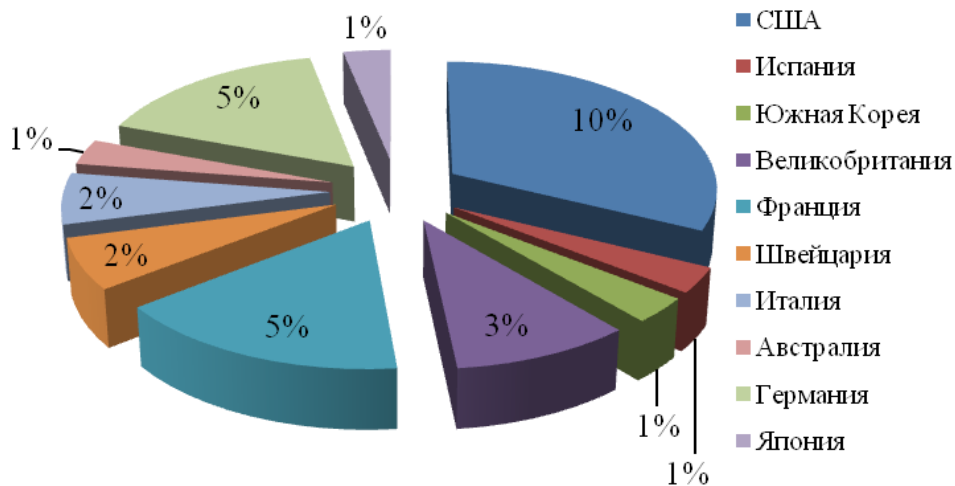


Figure 1. Structural distribution by country of the world's largest family companies (2016)

According to Figure 2.1, the United States is the absolute leader in the world in terms of the number and amount of assets of the family business in the international rating. At the same time, 32% accounted for family companies that trade through supermarkets, the automotive industry occupies 29%, the media business and trade in

catalogs only 6%. Other industries also occupy a large segment – 32%.

As for Libya, it can be seen that for a long enough period of independent existence of the Arab countries of the region, their economy, despite the rich mineral resources, has not become a component of the modern structure of the world



economy. At the same time, this region remains to this day for countries with developed market economies, primarily European ones, not only a source of various problems, such as uncontrolled migration, but also an invariably important zone of economic interests. The economies of the region, along with rich resource opportunities, have a great productive potential, which is to some extent realized in the course of market reforms. The degree of such implementation depends not least on the characteristics of the economic psychology of the Arabs. Being in the majority of the population non-market in the western sense of the word, it determines the existence of a special goal of their activity in the system of commodity-money relations: the desire is not so much to achieve results, maximize profits, but to implement the very process of creating a product and selling it.

The transition of Lebanon to market conditions for doing business became the basis for the development of private business, and gave a powerful impetus to the development of family businesses. It is worth noting that the interest of Lebanese scientists and specialists in the development of the family business is currently at the stage of formation. This leads to serious differences in approaches to determining the family business, the methodology used to study it, and assessing the prospects for its development. Consider the results of key changes in social and legal changes in the field of family business conducted by Lebanese and foreign researchers.

The ongoing reforms in Lebanon aimed at transition to a market type of economic management showed that, although at the initial stage of their implementation, there were no big changes, in the future the chosen direction made it possible to partially reorient the structure of production to the sphere of services. The reforms had a special impact on the choice of strategic goals and objectives of state regulation of social and economic processes through a gradual transition from religious influence to the secular sphere.

In connection with the fact that the family business is inherited, the heirs have been trained since childhood in the principles and characteristics of the business. This determines the success of their entry into the management of the family business. In this case, the secrets and technologies of doing business are transferred from generation to generation. The main differences of the family business are mutual assistance, responsibility, trust, cohesion. Family members are not attuned to their own result, but to the development of their business.

Preservation of family business in the future is based on planning the continuity of the family business. The rule of continuity is a clear understanding of who will lead the company in the next generation.

The analysis of behavior from the point of view of minimizing entrepreneurial risks, combined with the relatively long life of the business family, as an explanation of the findings of a number of national scientific studies, as well as expert conclusions, revealed the following: family enterprises, especially small ones, are often tightly integrated into local communities; which is focused on the interests of the local business community (ie, the priority of cooperation with local suppliers, the restriction of the level of foreign trade, Provision of employment for the locals). This can go so far that the decision to reduce or even close a family business will already be seen as a reduction in the number of jobs offered to local residents, which in turn will be in conflict with a high degree of commitment to the local community in which the family lives. Especially in small Arab countries, experts have determined the proximity of the conditions and mechanisms for running a family business with the market infrastructure where family businesses operate, resulting in, on the one hand, good relations with customers and knowledge of local market conditions, and on the other – a kind of barrier to enter the markets of other countries.

The complexity of research in the field of family business in Lebanon is determined by the need to analyze the economic efficiency of a large group of

family business enterprises compared to non-family businesses identified. At the same time, the analysis should be conducted on key absolute and relative indicators: turnover excluding VAT, the average number of employees, the number of enterprises of the appropriate type, according to the classification characteristics of micro, small and medium-sized enterprises, with estimated averages throughout the country. In this regard, it seems appropriate to single out family businesses in a separate group and monitor information about the family business on the basis of the complex methodology of comparative-comparative and complex regression analysis presented in the work to accumulate the best experience of successful family-type companies.

The Lebanese economy is dominated by family enterprises of all sizes. Associate Professor of the Department of Management and Director of the Institute for Family and Entrepreneurship of the Lebanese American University investigated the main drivers of growth of Lebanese family firms. Family enterprises in Lebanon, despite the crisis times in which the region is located, showed fi-

ancial stability. Business owners are always looking for opportunities to grow their business. A recent study conducted at the Institute of Family and Entrepreneurship of the Lebanese American University showed that the average life expectancy of family companies in Lebanon is about 40 years (world average 28 years), and 75% of firms of this age are currently run by the second generation. At the same time, 46% of Lebanese family enterprises show growth. During the social survey, 9% of respondents indicated an increase in income from the family business by more than 21%. The study confirms that the preservation and rooting of gender differences hinders the development of business in the Lebanese Republic.

Positive experience in supporting the role of women in the family business can be attributed a set of activities and initiatives by the US government. Thus, one of such initiatives stimulates the possibility of carrying out comprehensive programs for training and financing start-ups (men and women), which are successfully implemented by the American Small Business Administration (Table 1).

Table 1.– Features of the American Small Business Administration (SBA)

Elements of the SBA system	Characteristic
Objectives of financial support	<ul style="list-style-type: none"> <li>– Replenishment of working capital of small enterprises;</li> <li>– purchase of land and property;</li> <li>– purchase of equipment and a microfinance program.</li> </ul>
Government programs (7a, SDS / 504, Miscolans)	<ol style="list-style-type: none"> <li>1) Program 7a: an entrepreneur can obtain guarantees, if for any reason he can not provide a security.</li> <li>2) SDS / 504 program: a long-term loan with a fixed rate for the purchase of land is granted.</li> <li>3) Miscolans: small short-term loans to small businesses are provided (average loan size is \$13,000).</li> </ol>
Grant of guarantees	<ul style="list-style-type: none"> <li>– an enterprise takes a loan at the start and does not have a credit history;</li> <li>– the borrower needs a long-term loan, which exceeds the internal credit requirements of the bank;</li> <li>– subject to the issuance of a loan for a type of activity unknown to the creditor.</li> </ul>

In the American model of building financial support for small businesses, state and private regula-

tory instruments are effectively combined. Another area of activity of the SBA is active assistance to

small export-oriented enterprises. In this regard, the SBA together with the US Department of Commerce set up export promotion centers. Also in the competence of the Small Business Administration during the implementation of information support and training of entrepreneurs in the framework of trainings and courses. The institutional system of the bodies, which finances small and medium-sized businesses from the budget, includes centers for women entrepreneurs (WBCs). Their competence includes the preparation of a business lady for business management.

All the decisions implemented within the framework of state programs are controlled by independent inspectors who formally work in the structure of the American administration of small business support, but are independent of the structure of the administration. Employees of this structure, having discovered

any violation, can immediately send a request directly to the US Congress or the US President.

In the United States, there are so many benefits that private and family businesses seek help from audit firms to determine the most suitable benefits for them.

Thus, the American model of business regulation, including family regulation, has a more developed institutional structure, broad financial support and social support.

Analysis of the conditions of inheritance and conduct of family business in Lebanon and the United States, conducting comparative analysis and forecast of prospects, allows to determine the differences in socio-economic development of countries, and will also allow to learn experience. Applying the method of comparative analysis, we will reveal certain similarities and differences between the countries studied (Table 2).

Table 2. – Similarities and differences in inheritance and family business in the Lebanese Republic and the United States

Similarities	Differences
The ongoing reforms in the field of family business were carried out according to the same strategy: step by step from direct regulation to market self-regulation.	Lebanon has a special political system based on religious diversity (confessionalism). State regulation is carried out in accordance with the division of society into religious communities.
The general legal aspects of the registration, conduct and inheritance of the family business of the United States and Lebanon are almost identical. For example, the owner is responsible for initiating and implementing the process of transferring the family business.	Traditional views on the family structure and the role of women in the development of family business. The normative legal framework in Lebanon is formed taking into account the basic religious principles of Islam. The US is a secular state that has abandoned the norms of traditional law.
In the transition period, there were similar problems: pricing, tariff regulation, the predominance of state ownership.	The size of the family business, national ideology, management concept, etc. Features of the socio-cultural structure of the United States and Lebanon determined the choice of priority areas for the conduct of the family business: in the US – all spheres of the economy, in Lebanon – social services.
Gradual introduction of modern legal and social institutions: inheritance rights, social reform, reduction of the influence of traditions on the general way of life, etc.	The mechanisms and instruments of inheritance in the family business are different: in the USA – equal rights of men and women, in Lebanon – gender inequality.

All of the above differences in the conduct of business between the US and Lebanon account for the low

performance of the Arab state in the international rating of the Doing Business of the United States (Table 3).

Table 3. – The situation of Lebanon and the United States in the rating of Doing Business

Countries	2006 г.	2010 г.	2015 г.	2016 г.	2017 г.
USA	3	4	7	7	8
Lebanon	95	108	104	123	126

According to the information provided, the most favorable position in the US in 2017 (8th place), however, this indicator is worse than 2006 (3rd place). Lebanon deteriorated its ranking in the ranking in 2017 compared with 2006 by 31 positions.

Rating indicators of the Doing Business rating 2016–2017. rightfully point to problems with taxation, lending, protecting the interests of investors, etc.

The transformation of the conditions for the conduct of the family business in Lebanon was carried out over a period of more than 50 years, during which time the following features manifested themselves in the reforms:

- firstly, during the whole process of socioeconomic transformations, the orientation of the reforms to liberal ones remained, which is the main specificity of the Lebanese reforms;

Secondly, the implemented transformations were implemented gradually and plannedly through the implementation of state programs to support business, including the family one. This made it possible to significantly reduce the costs of the ongoing transformation. Low spending allowed Lebanese family-type companies to survive the crisis;

Thirdly, the current socio-cultural changes in Lebanon are aimed at moving to a new model of society formation. At the initial social goals of the development of the family business were blurred, but at the present stage, the main strategic goal is a gradual transition to a market type of running a family business and the opportunities for women to take an active part in this process;

Fourthly, the implementation of reforms in Lebanon was carried out by direct government influence, which allowed to achieve the projected results and

proved the effectiveness of the application of administrative measures for the implementation of socioeconomic transformations;

Fifth, the success of the family business in Lebanon was realized by borrowing the experience of other Arab countries, but the changes were adapted to the Lebanese specifics of creating a socialist market economy.

At the same time, there are certain problems hampering the development of forms and stability of the mechanisms for running a family business in Lebanon. In particular:

- Substandard institutions (corruption, bureaucracy);
- limited use of technology and innovation;
- low level of intra-Arab economic integration;
- large public sector;
- authoritarian rule and political instability;
- export of capital;
- sanctions, conflicts, wars and, as a result, excessive military expenditures.

To date, in order to guarantee the continuity of the family business in Lebanon, it is necessary to develop not only the steam inheritance bases, but also a broad vision of the owner, which allows from the very beginning to involve his children in the family business, as well as the ability to combine the solution of everyday management problems with building relationships between family members and overcoming contradictions. In this regard, the following organizational rules can be proposed to implement a new mechanism aimed at ensuring the continuity of generations in the family business:

- the conscious and methodical involvement of family members in the family business;



- ensuring motivation for understanding the goals and objectives of the family business of children and heirs;
- Respect for the human resources of the enterprise;
- exclusion of possible manifestations of nepotism in case of transfer of business management to heirs who do not have the relevant competence;
- distribution of decisive powers as widely as possible between representatives of different generations working in the family enterprise, in order to transfer knowledge, competence and experience.

As part of the implementation of the above-mentioned initiatives, Lebanon is assisting the family business in identifying problems that may arise, as well as providing expert advice on the first steps in the creation of family businesses. It is also necessary to note the great untapped opportunities for international cooperation of associations of the largest family companies or the creation of cooperative ties in the experience of the United States, which allow exchanging best practices and studying advanced ideas that have proved their effectiveness. A successful example of the organization of an entire network of seed enterprises is a new project that allows the younger generation of family business heirs to short-term an internship in another private or family firm, often in another region or another business segment. Similar internships are organized in a variety of markets, usually developed countries in the US, Finland and Switzerland.

Thus, with a competent management approach and thorough planning and preparation of the process of changing generations in the family business, destabilizing tendencies and factors can be effectively overcome and continuity in the family business can be created by creating favorable conditions for its future development.

#### **Main conclusions**

Analyzing the studies devoted to the family business, it can be concluded that in a gradual transition from the domestic understanding of the family busi-

ness as a company in which members of one family work, to business inherited by the family for several generations. All this determines the shift in the methodological emphasis of research – from describing the problems of interaction between relatives in the implementation of business ideas and strategies to study the key factors that affect both the effectiveness of the business itself and the success of its transfer by inheritance and keeping it the status of an important family asset.

The life cycle of family business organizations is related to the life cycle of the family itself and requires special economic and management actions in the formation of a new business at the startup stage, at the subsequent stages of transformation, merger, fragmentation, preservation and transfer from one to the other.

When considering the family business as an object of inheritance in the modern social and legal situation of the Lebanese Republic, it is determined that it is necessary to develop a policy of continuity of the family business that avoids conflicts of interest in the transition of power from one generation to another and serves as the basis for fulfilling two main conditions for the long-term success of family companies – professional management and continuous management of business by family members. That is why the problem of continuity of the family business, the formation of future entrepreneurial competencies of subsequent generations, motivating their desire to participate in this business can be systematically solved in the Lebanese business practice only taking into account the institutional support and time factor.

Increased scientific and practical interest in this issue in Lebanon is due to the need to eliminate significant gender differences in the vision of seed business, which are still inherent in this country. In this regard, scientists agree on the need to change the institutionalization of the mechanisms of continuity of the family business and build an effective organizational culture in Lebanon. Studying and adapting the experience of



the USA in this vein can serve as a promising modeling mechanism for transformation, both legal gaps in the legislation of Lebanon, and the socio-cultural characteristics of running a family business.

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## Section 4. World economy

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### THE ROLE OF TOURISM IN THE INCLUSIVE DEVELOPMENT OF AFRICA

**Abstract:** the article considers the development of tourism in Africa as one of the priority areas of inclusive development of the countries of the continent that can positively influence the growth and development of the economy of African countries and the entire world community, which is especially important in the context of the globalization of the world economy.

**Keywords:** tourism, Africa, inclusive development, integration, GDP.

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### РОЛЬ ТУРИЗМА В ИНКЛЮЗИВНОМ РАЗВИТИИ АФРИКИ

**Аннотация:** в статье рассматриваются вопросы развития туризма в Африке, как одного из приоритетных направлений инклюзивного развития стран континента, которое способно позитивно повлиять на рост и развитие экономики африканских стран и всего мирового сообщества, что особенно актуально в условиях глобализации мировой экономики.

**Ключевые слова:** туризм, Африка, инклюзивное развитие, интеграция, ВВП.

Геополитическая обстановка в современном мире очень быстро меняется. На мировую арену выходят новые игроки и говоря о Африке, заметим, что континент стал значительно сильнее и в экономическом и политическом смысле.

И мнение о том, что «... в нынешнем веке Африка будет самым динамично развивающимся регионом мира, от которого во многом будет зависеть характер и темпы роста в развитых государствах...» [1, С. 25] считаем оправданным.

Что же может способствовать устойчивому развитию Африки? Одним из возможных вариантов, наряду с развитием реального производства, индустриализации континента; созданием условий для увеличения охвата и повышения качества образования населения, особенно молодежи; развитием инфраструктуры; экологически чистых технологий получения энергии – является туризм.

И этот вывод основывается на докладе ЮНКТАД «Economic Development in Africa Report 2017: Tourism for Transformative and Inclusive Growth» в котором важную роль авторы отводят развитию туризма в Африке, отмечая, что, африканским политикам необходимо рассматривать туризм как основополагающий элемент в стратегии экономического развития, способный создать широкий спектр экономических преимуществ и способствовать росту благосостояния местных общин, а межсекторальные связи с туризмом могут способствовать социальной интеграции, сокращению социального неравенства и бедности [2, Р. 77].

Однако далеко не каждая африканская страна имеет возможность развивать эту перспективную отрасль экономики. И прежде всего это сопряжено с проблемой безопасности в африканских странах, с отсутствием соответствующей инфраструктуры и высокого уровня сервиса, необходимого для развития туризма. Поэтому необходима работа правительств африканских стран в направлении развития прочных межотраслевых связей с учетом партнерства с частным сектором и налаживания взаимодействия с местными поставщиками, с учетом соответствия санитарным и фитосанитарным требованиям к сертификации на органическую продукцию предъявляемым туристическими организациями [2, Р. 76]. «На наш взгляд именно эндогенные факторы способны коренным образом изменить существующее положение дел на Африканском континенте и способствовать росту и развитию стран региона» [3, С. 78–79].

Туризм хорошо развивается в условиях наличия соответствующей инфраструктуры. А ее

совершенствование: улучшение водоснабжения, санитарии, энергоснабжения, транспорта и услуг, связанных с информационно-коммуникативными технологиями (ИКТ), является крайне важным фактором для развития местных общин. Также развитие совместных предприятий является перспективным в сфере туризма при сочетании иностранного и местного капитала в управлении и владении отелями, гостиницами. Предоставление местными туристическими операторами услуг онлайн-бронирования позволит туристам приобретать билеты и туристические услуги непосредственно у местных поставщиков, исключая звено международных туроператоров, что послужит созданию большего местного контента в цепочке формирования стоимости туризма [2, Р. 76–77].

Являясь основным источником экспорта услуг в Африке, туризм создает спрос на другие услуги: энергетику, ИКТ, имеющие важное значение для роста экономики. В 1995–2014 гг. резко возросли доходы от экспорта туризма. Общий вклад туристического сектора в ВВП Африки удвоился с 69 млрд. долл США (1995–1998 гг.) до 153 млрд. долл США (2005–2008 гг.) и увеличился до 166 млрд. долл. США в период с 2011 г. по 2014 г. В качестве доли в ВВП Африки туризм составлял 6,8% в 1995–1998 гг., 9,6% в 2005–2008 гг. и 8,5% в 2011–2014 гг. и наибольшее значение имеет в Северной, Восточной и Южной Африке [2, Р. 22–23].

В 18 странах Африки эта доля превысила 10%, что свидетельствует о важности развития в них туризма: Эфиопия (10,6%), Зимбабве (10,9%), Кения (10,9%), Танзания (11,0%), Ботсвана (11,3%), Сенегал (11,4%), Коморские острова (11,9%), Мадагаскар (12,3%), Египет (12,5%), Лесото (13,2%), Намибия (14,7%), Тунис (15,1%), Сан-Томе и Принсипи (15,9%), Марокко (18,4%), Гамбия (20,5%) и страны с наивысшими показателями, приходящимися на долю туризма в ВВП: Маврикий (26,7%), Кабо-Верде (43,4%), Сейшельские острова (61,5%) [2, Р. 23–25]. Как видно из перечисленного списка, это страны, относя-

щиеся к разным категориям – наименее развитые страны, развивающиеся страны, не имеющие выхода к морю. Однако наиболее ориентированы на развитие туристических услуг три островных государства Африки, занимающие небольшие площади: Сейшельские острова, Кабо-Верде, Маврикий. Это указывает на то, что туризм возможно развивать исходя из различных географических и экономических условий.

Туризм также способствует углублению региональной интеграции. В настоящее время в Африке 4 из 10 международных туристов – представители африканских стран [2, Р. 141]. Континентальный туризм увеличивал показатели с 2010 г. по 2013 г. и ожидается его дальнейший рост. Наряду с континентальным и внутрирегиональным туризмом дает возможность укрепить местные связи поскольку у африканских туристов во многом схожие вкусовые предпочтения и большой спрос на местные продукты чем у туристов, приезжающих из других стран и континентов. Этими возможностями африканского туризма можно воспользоваться, признав его потенциал на уровне региональных экономических сообществ и проводя комплексное планирование развития туризма. В настоящее время туризму уделяется больше внимания в Южной и Восточной Африке, чем в Западной и Центральной. Так, важность туризма в планах регионального развития подчеркивается только в COMESA, EAC, IGAD и SADC. Они все разработали или находятся в процессе разработки регионального плана развития туризма, за исключением EAC [2, Р. 142].

Способствуя интеграции, туризм предоставляет экономические возможности и для трудоустройства часто исключенных и наиболее уязвимых групп населения, таких как женщины и молодежь. Половина работников в сфере туризма – женщины. Они вносят значительный вклад и в сектора, связанные

с туризмом, например, в сельское хозяйство. А в качестве владельцев туристического бизнеса и работодателей женщины составляют 30,5% [2, Р. 97].

В сфере туризма занято также большое количество молодежи, обладающей разным уровнем образования и навыками. Однако при дальнейшем развитии африканской экономики этот демографический дивиденд может еще более явно проявиться и получить свое развитие. Кроме того, туризм способен привлечь низкоквалифицированных специалистов, особенно в сельских районах, располагающих наименьшими возможностями для трудоустройства, а спрос на сельскохозяйственную продукцию для туризма может обеспечить дополнительный доход местным домохозяйствам [2, Р. 97–98].

Развитие туристической отрасли в африканских странах актуально для всего мирового сообщества, особенный интерес может проявить Европа, так как это положительно отразится на возможности увеличения мест для путешествия европейцев, а также будет способствовать созданию новых рабочих мест в африканских странах, что послужит улучшению качества жизни африканцев, задействованных в туризме и тем самым будет способствовать уменьшению миграционной нагрузки на европейские страны со стороны Африки.

Таким образом можно отметить, что развитие туризма довольно сложная отрасль экономики, особенно для Африки, но именно она может способствовать инклюзивному развитию африканских стран. Для этого необходимо стремление народов к достижению мира, упрощение процедур для посещения африканских стран, усиление интеграции стран континента, развитие информационного поля наряду с инфраструктурой и подготовка кадров, соответствующих высоким требованиям современных туристов.

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## Section 5. Regional economy

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### PROGRAM BUDGETING MEANING AND IMPLEMENTATION BENEFITS

#### **Abstract:**

**Keywords:** Program budget, self-government, the allocation of resources.

**Introduction.** The government of any country needs financial resources to implement its functions and obligations. These resources are reflected in the state and local self-government budgets. Thus, the budgetary process has one of the key roles for the development of the country and the functions of the government. The budget itself is a unified process of budget preparation, planning, approval, performance and reporting, and the budget is the main fiscal document of the year, funding the major programs and activities that the government carries out during the year. Therefore, it is very important that the budget should be planned transparently, deliberately and with a wide involvement of the society, and expenditure will be implemented as efficiently as possible. In addition, it is important that the society is actively involved in all stages of budget formation and are not interested in monitored budget expenditures only. The cost effectiveness of the expenditures is largely determined at the stage of the formation of the budget when the aims and the amount of financial resources they need to achieve are announced.

The leading role in the country's budget system is the state budget. It is the main financial plan of the country, the main financial system of the financial system. Its main purpose is to create conditions for the effective development of the economy through financial assistance, to resolve common state objectives and strengthen the country's defense capabilities. One of the main tasks of the state budget is to raise the level of living and quality of the population;

**The main aims and objectives.** The leading role in the country's budget system is the state budget. It is the main financial plan of the country, the main financial system of the financial system. Its main purpose is to create conditions for the effective development of the economy through financial assistance, to resolve common state objectives and strengthen the country's defense capabilities. One of the main tasks of the state budget is to raise the level of living and quality of the population;

**The research subject and object.** The subject of research is the study of the essence and significance of outcome oriented (program) budgeting

and analysis of its implementation process. Public finances and budget-oriented budgeting is the subject of research;

**Research Methods.** The methods of logical analysis are used to achieve the objectives and goals set out. We have also used statutory, systemic, statistical, empirical, synthesis and analysis methods. Methodological basis for research is the Georgian and foreign literature on the program budgeting system, periodical print publications, data obtained from internet.

It is best to note the difference between the usual budgeting and the program budget before considering the program budgeting. The program budget is constructed on specific areas, such as education, health care, and not the assignment of any institution. The program budget from the usual budget, for example, in the case of any local self-governance, differs from the fact that the usual budget is built on the assignments of the specific local self-governing institutions and their assignments (the sum of their funding) is the budget of the local self-government. While in the case of the program budget, as already mentioned, there are infrastructure, education, health care and other destinations, and that's why they create a program budget.

The program budget is different from ordinary budget because it involves a significant reduction in cost control. It is related to the fact that the program budgeting, as a result-oriented budgeting form, Resource Management Program performers consequences of increasing responsibility in exchange for providing a more wide-ranging powers. At the same time, cost control is not weakening, but spending cash performer internal control and external control of the mixing takes place.

In addition, the program budgeting, public authorities focuses on the priorities of the state budget to ensure effective distribution of resources and the efficient and effective budget spending on mghtseva.

The last two decades have become the period of implementation and implementation of software-

targeted principles in the state financial system. According to the latest research by the German International Cooperation Society (GIZ), the practice of implementing software budgeting from the OECD (Organization for Economic Co-operation and Development) 25 countries has done so or intended to transition to the program budget. This means that most of the developed countries have made fundamental changes in the budget system.

Program budgeting involves integrating information on effectiveness / effectiveness in the process of budgeting and resource alignment. Under the OECD (Organization for Economic Cooperation and Development), this is a "budgeting form that connects the results of the resources to the outcomes." U.S. General Accounting Office (GAO) Definition of results-oriented budget implies the integrating of information on achieved results in the budgeting process [6].

According to M. Robinson, program budgeting involves a budgetary process, including the distribution and use of budgetary resources to provide state services and state transfers. Program Budgeting is directed towards the following main tasks:

- Ensure the stability of the tax-budgetary sector (including the level of deficit and debt liabilities) on the net of the budgetary parameters;
- Ensure efficient distribution of resources for funding priority sectors and programs;
- Ensuring efficiency and efficiency of budget expenditures through the establishment of planning and state-of-the-art effectiveness system.

The program budget concept is constantly evolving. Budgeting in each country has its own peculiarities, there are no uniform methods, procedures and tools. The main purpose of program budgeting is to increase the economy / productivity and effectiveness of budget management by reinforcing the connection between the resources allocated for spending institutions and their achievements, based on the results / effectiveness of the results.

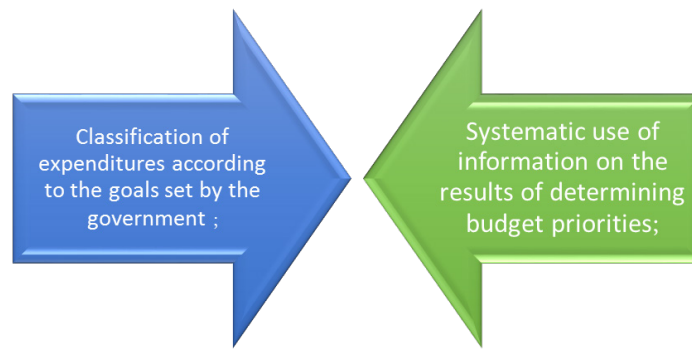


Diagram 1. Program Budgeting As a result-oriented budgeting mechanism, it consists of two main components

Budgeting program in the first instance may be considered in planning, programs and budgeting system (Planning, Programming and Budgeting System (PPBS)) introduced in the US in the 1960s, whose main goal was to increase the cost-efficiency of resource allocation to better prioritization. The main challenge, in response to which the reform was carried out, related to the view that the cost of distribution is not sufficiently / fully answering the demands of a changing society, and ineffective tax planning and information on the results of the budgetary process of the integration of low quality because of the budgetary resources for it Mavloba en route intact dabalepektiani programs. Significantly.

Results-oriented budgeting is the main essence of the effectiveness and efficiency of the activities of the regular assessments, namely: public service timeliness, quality and availability; State by the needs of the service; Cost-effectiveness, which is to achieve maximum results with this guide or size of the resource unit results content with minimal costs; Performance, which will characterize the level of program goals, the expected results indicators.

Performance-based budgeting, the results / benefits of information integration in the budgeting process and an important prerequisite for efficiency and transparency of public sector growth.

It is necessary to note the advantages of the program budget [7]:

As noted above, the results / benefits of information integration in the budgeting process, an important

prerequisite for efficiency and transparency of public sector growth. It contributes to the improvement of the funds allocation decisions damkharjavi structure creates incentives for more efficient management of funds allocated to them by the results achieved so far as it affects the amount of funding; It also contributes to the efficient planning process and acts as a signaling tool, which provides details of the key participants and less efficient and effective functioning of the programs. Allow the Parliament to be presented to the public and more information about the quality and condition of the priorities in accordance with the objectives, in addition, allows, Assess individual contributions to specific programs to achieve the objectives. At the same time, it is considered that the results achieved by the use of objective data about the budgetary decision-making not only contributes to the efficiency of resources, but also aggregate fiscal discipline development. Saving funds in inefficient areas of growth "fiscal space" and the government's medium-term fiscal sustainability of flexibility when making spending decisions without endangering.

Thus, the program budget is an important tool of modern public finance management. Its main advantages can be summarized as follows: to improve service delivery planning, contributes to the fight against corruption through increased transparency, the "bridge" between the public and local government, contributes to the improvement of management efficiency and control, allowing programs reo Ganizeba and others.

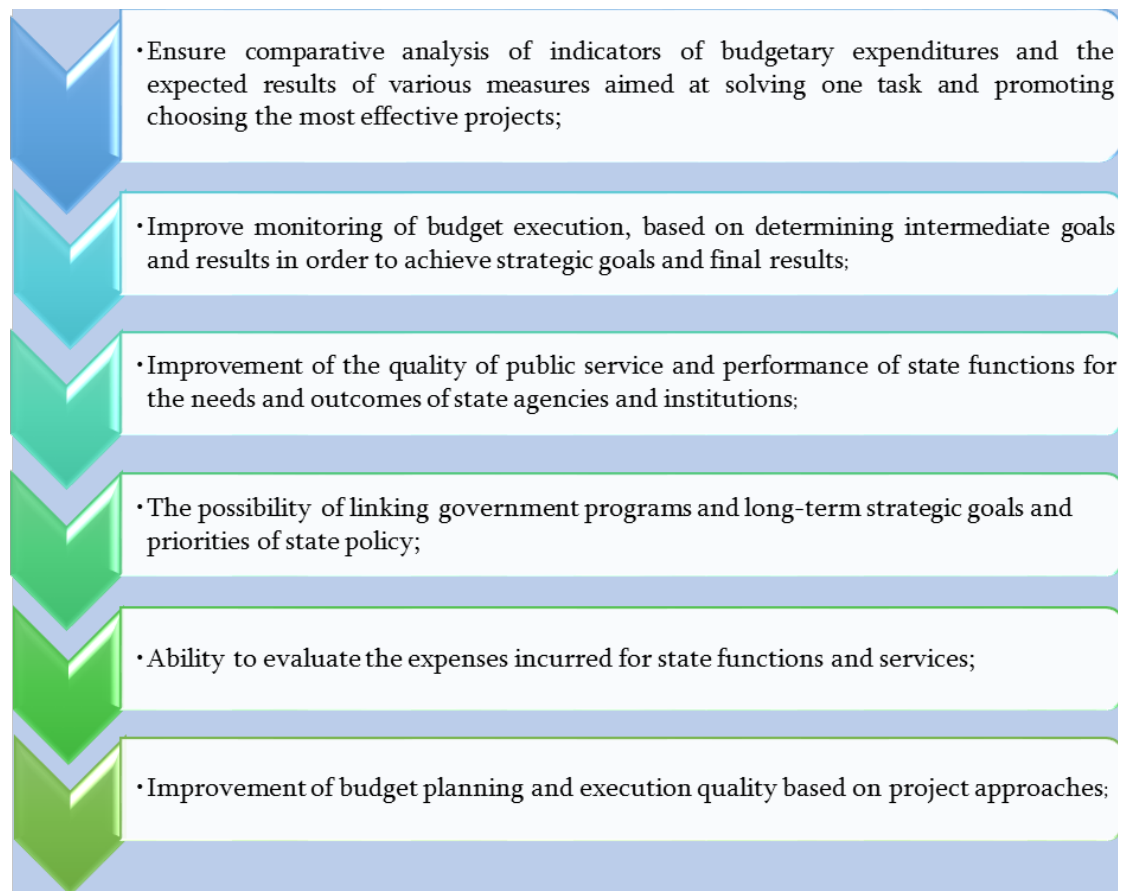


Diagram 2. Benefits of the program budget

Georgia has been formally moved to the program budget, however, result-oriented (program budgeting) implementation process is still at an early stage, in particular, the state budget was prepared in 2012 for the first time the program format.

Since 2012, the state budget bill included attached documents for more information on the budget for the programs / sub-programs, the expected results and performance indicators.

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## Section 6. Finance

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### ACTIVATION DIRECTIONS OF BANKS INTERACTION WITH REAL SECTOR ENTERPRISES IN LENDING TO INNOVATIONS

**Abstract:** The content of the “interaction” concept has been studied. The definition of the statement “interaction of the banking and real sectors of economy” has been generalized. The features of financing, interconnections and interaction regularities depending on specificity of banking system functioning have been determined. The factors that restrain banks in active innovative lending have been indicated. The positive results and advantages of interaction between banks and customers have been determined.

**Keywords:** banking and real sectors, interaction, innovations, lending, benefits, restraining factors.

#### **Problem statement**

The current external challenges faced by most countries of the world have intensified the focus on the real sector as the basis of an independent and competitive economy, which, due to its inertia and the weakness of the perception of regulatory influence, needs the support of banking sector as one of the most advanced segment of the financial market. According to the results of recent research, in countries with a transitory economy meeting the needs of the real sector by means of banking resources is defined as a strategic direction for providing innovative economic development [1].

During the transition process of Ukraine from the command-administrative economy to the market economy, all areas of the economic system, especially the banking and real sector of the economy, have undergone changes [2; 3]. However, their development took place autonomously. The experience of the developed countries clearly shows that economic

growth, increased investment and innovation activity of economic entities can be possible only in conditions of effective interaction between banking and real sectors.

#### **Analysis of recent research and publications**

The issue of interaction between banking and real sector is rather new and partly reflected in the works of domestic and foreign economists.

Thus, the study of each sector has been carried out by the leading foreign economists A. Smith, D. Ricardo, K. Marx [4–6], etc., who have made a significant theoretical contribution to the formation and development of the economic system concept. The following scientists, such as T. Beck, A. Demirguc-Kunt, R. King, R. Levine, J. Shumpeter [7–11] and many others, have been involved in solving issues related to the evolution and development of sectors and interaction between them. The issue of interaction between banks and enterprises was of particular concern to Ukrainian scholars, economists



V. Alexandrova, Y. Bazhal, O. Baranovsky, M. Danko, O. Dzyublyuk, L. Kuznetsova, M. Rudenko, A. Semenog, O. Snizhko [12–18] and others. Recommendations in this area are of great importance as their implementation will allow to work out a set of measures aimed at financing innovative development of Ukrainian economy by banks.

### **Setting objectives**

Banking and real sectors are the basic elements of the institutional structure of the economic mechanism of the national economy. The inadequate level of interaction between sectors leads to a reduction in business and investment activity, monetization, causes increased technological degradation and slower economic growth. In order to solve these problems within the framework of the general economic policy of Ukraine, it is necessary to create conditions for the development of lending to the innovative economy and to promote demand for loans from banks by enterprises in the real sector.

Available scientific and analytical developments have a theoretical and applied value, covering the actual aspects of financial interaction between banks and enterprises, peculiarities of monetary and credit relations, problems of effective banking activity in the conditions of market transformation.

However, there are issues that require further research, including identifying promising areas of interaction between banking and real sectors, peculiarities of its manifestation in the formation of an innovative model of economic development of Ukraine.

### **The aim of the study**

The aim of the work is to develop recommendations for enhancing interaction of banks and enterprises of the real sector of the economy in financing innovative projects. The following objectives are supposed to contribute to the aim achieving:

- to study the concept “interaction” as a basis for the formation of conceptual approaches to the development of interaction between banking and real sectors of economy;

- to prove that the specifics of the functioning of banking systems predetermine the peculiarities of financing, interconnections and regularities of interaction with other sectors of economy;

- to form a system of factors restraining the participation of the banking sector in financing innovation in Ukraine;

- to identify positive results and advantages of the possibility of banks financing innovative development in the process of interaction with customers.

### **Materials and methods**

To achieve the objectives we have used the following methods: the systematic, the theoretical generalization and the comparative comparison methods. The information base of the study consists of scientific works of Ukrainian and foreign scientists on the issue investigated.

### **Results**

In the scientific world there is the idea that breakthrough in innovation development and ensuring long-term economic growth is impossible without the search for non-standard solutions in the field of organization and forms of interaction between the banking and real sectors of economy, whose development vector is in line with the goals and objectives of socio-economic development of the country and the specifics of the economic phases which are changing rapidly.

The analysis of literary sources allowed us to conclude that the unity of representations on key issues of interaction between banks and enterprises of the real sector of economy has not occurred, and that requires the disclosure of this concept.

In the Great Encyclopedia Dictionary the interaction is defined as a “philosophical category that reflects the processes of objects’ influence on each other, their mutual conditionality, the most general and universal form of development and change of their state, as well as the creating one object by another” [19]. Interpretation of the term under broader application in the field of relations has created a number of definitions, such as “interconnection of

phenomena, mutual support” [20]; “participation of objects in joint work, activities, cooperation, joint implementation of operations, transactions” [21]; “the influence of various subjects, phenomena on each other, which determine the changes in them, the consistency of provisions, conclusions, results of human activities in various spheres” [22]; “the process of indirect influence of objects (subjects) on each other, which generates their mutual conditionality and connection” [23], etc.

The generalization of the authors’ different opinions in the scientific literature suggests that the definitions of interaction between banking and real sectors are limited to the following: *the participants and the priority in initiating the interaction* (enterprises of the real (industrial) sector, the government, the central bank, where the initiative belongs to the banks; *scale of interaction* (interaction on micro, meso and macroeconomic levels, taking into account endogenous and exogenous factors) and *forms of interaction* (lending, integration, partnership).

Thus, the term “interaction between banking and real sectors of economy” involves a process of mutual influence on each other of the parties with regard to their conditioning and orientation to achieve the final results as at the micro level (maximizing profits, business expansion), and so the effects on the meso and macro levels (positive changes in the structure of regions, industries of economy).

Further on, in accordance with the objectives of our study, we note that the interconnections and patterns of the interaction of the banking sector with other sectors of economy depend on the specific functioning of banking systems and the features of their financing mechanism. As you know, in the world practice there are conventionally named banking and market financial systems.

In the article, we investigate the peculiarities of banking financing of the economy, which is carried out by the banking system (bank-based financial system). With this method of financing, the share

of the banking sector in the financial system is very big. In addition, a significant part of the external financing of enterprises in the real sector is also carried out through banks. Such a mechanism is used in the banking sector of the Ukrainian economy.

Classic examples of such a financial system are Japan and Germany. The banking system of Japan is called “the main bank system”. The basic principle of the effective interaction of most Japanese banks with the real sector is to establish lasting relationships with their clients (companies) based on mutual trust and impeccable reputation, which provides the basis for financing innovative projects.

The German banking system is called “the hausbank system”. Its principle of effective interaction between banks and customers is that the population puts their shares deposited in banks that are eligible to vote at shareholders’ meetings. As a result, banks accumulate fairly large stake that enables them to influence the activities of German companies, many of which are their regular customers. Taking into account that banks become significant owners of corporate companies, both they and their clients get interested in the successful development of their business. The above mentioned, in our opinion, creates opportunities for banks to provide innovation loans.

The aforementioned possibility of banks’ funding of innovative economic development is based on positive results of banks and clients cooperation. The main of them are as following:

- obtaining a broad access to information on the activities of borrowing companies (minimizing losses from possible credit risks);
- possibility of influencing the corporate policy of enterprises along with managers and shareholders (creating conditions for the formation of long-term credit resources for the banks to finance the client’s innovative programs);
- ownership of a shareholder’s capital stake of a borrowing company (introduction of innovations by companies-borrowers as an incentive to maximize their value);

- possibility of economizing on the scope of investing depositors' funds (a significant reduction in transaction costs of investment);
- flexibility in dealing [24] with setting the interest rate on the loan, assessing the needs of the enterprise in the credit facilities, its ability to repay the loan and the interest (taking into account both the current financial condition of the client and the long-term ability to make payments);
- advantages over private investors in obtaining the necessary information on borrowers (reducing the negative impact of asymmetry of information);
- effective functioning in terms of a lack of a strong legislation and judicial system in the country necessary for drawing up reliable credit agreements and forcing them to be properly executed (self-regulation of all problems arising in the process of cooperation, mutual trust and preservation of the reputation of each of the parties to the agreement).

It should be noted that financial systems dominated by banks operate in a vast majority of countries with a transitory economy, including Ukraine. Therefore, in the context of a shortage of budget resources, the issue of attracting the banks economy into the support system of innovative sector becomes relevant. However, there are a number of factors restraining the involvement of the banking segment in financing innovative projects.

Unfortunately, the potential of bank lending as a source of funding for investment and innovation activities of Ukrainian enterprises has not been used in the period prior to the financial and economic crisis of 2008–2009, which should be considered rather favorable for the development of economy, when Ukraine created the preconditions for financing innovation projects by banks. At that time the following reasons did not allow to reorient banks for active innovative lending:

- targeting high profitability of credit operations;

- lack of motivation in lending innovative projects due to their higher credit risk and long payback period (compared to lending to replenish working capital);
- lack of banks' proper experience in managing the risks of implementing innovative projects;
- insufficient development of investment technologies by banks, including expert examination and selection of investment projects;
- lack of corrective influence of the state on the formation of the banks' credit policy.

These reasons did not allow domestic banks to develop innovative-investment lending to the real economy even in the availability of economic growth and the banking system in particular, whose growth was achieved through the injection of large volumes of foreign capital.

While implementing the objectives of activating and enhancing the key role of Ukrainian banks in the investment and innovation process, it must be taken into account that in addition to banking financial potential, to which is mostly drawn the attention of economists and practitioners, there are other advantages of banks in comparison with other participants of the financial market. These are, in particular, as follows:

- ability of banks to implement an individual approach to clients based on identifying and monitoring their needs;
- possibility of accepting the increased risks accompanying lending to investment projects due to diversification of the loan portfolio and a large number of risk management tools;
- project analysis skills, flexible investment and credit technologies;
- experience of interaction with international and foreign financial organizations, state authorities, trust funds and practice of interbank cooperation, which is important for the development of the market of syndicated loans.

Only banks can accompany lending projects with complex analysis and, if necessary, their refinement to that stage at which the project will attract investors and creditors resources, that is, banks while lending

to the project can improve its structure and design appropriate financing scheme [25].

Only banks that are interested in the loans repayment can fairly evaluate the investment results, overcoming the information asymmetry associated with the assessment of the prospects of innovation, and identifying well-prepared and effective innovation projects.

In addition, only banks have the possibility of massive, large-scale lending projects. The cluster system of financing innovation seems the most appropriate one under current conditions for Ukraine's economy.

The key players in the innovation process within this model are diverse and independent market agents: small innovative firms, large companies, research institutes, universities, united around certain sectoral and territorial clusters. In addition, it is envisaged that there is a strong vocational technical and special technical education focused on the specific needs of corporations.

To implement the strategic objectives of the establishment and development of innovative business in Ukraine banks need rapid development of advanced methods of innovative banking management, which consist of: quality monitoring the implementation of innovative programs; syndicated lending;; creating preconditions for the development of customers' business by predicting and stimulating customer needs in modernization and providing them with loan products, introduction of new technologies to produce competitive products.

Banks should offer their customers loan products tailored to their needs, i.e. taking into account risk management functions, fundraising for the project, consulting, and supporting projects. These loan products of banks should be viewed as an investment in innovation, that is in business development of their corporate customers and the economy as a whole on the basis of scientific and technological achievements, or as innovative banking loan products.

### Conclusions

The results of the study of theoretical and applied issues related to the financing innovations by Ukrainian banks prove the lack of an integrated and comprehensive approach to the analysis of the current situation. We believe that certain activities of domestic banks require new methodological approaches, such as a need for additional in-depth studies of relationships and interaction between banks and innovative economy; identifying the place and role of banks in financing innovative development of economy in the conditions of external influence of financial globalization and internal impact of crisis phenomena in Ukraine.

Solving these problems will promote more effective interaction of banks with the real sector of economy, intensifying their influence on innovation development, strengthening the competitive positions of banks in the financial market of Ukraine, that is increasing the role of banks in financing innovative development processes of the economy.

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## **PRIORITIES, RECOMMENDATIONS OF STATE FINANCING OF FUNDAMENTAL SCIENCE IN CONDITIONS OF SANCTIONS AND CRISIS**

**Abstract:** The article deals with the problems of the country's economic development, financing of science and scientific research, fundamental science and scientific research, financing of science as a priority area for investment, comparisons with developed countries, recommendations for public funding of basic scientific research under sanctions, embargoes, and a deficit budget.

**Keywords:** innovation, scientific and technological development, investments, internal costs for science, sanctions, the federal budget, research funding.

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## **ПРИОРИТЕТЫ, РЕКОМЕНДАЦИИ ГОСУДАРСТВЕННОГО ФИНАНСИРОВАНИЯ ФУНДАМЕНТАЛЬНОЙ НАУКИ В УСЛОВИЯХ САНКЦИЙ И КРИЗИСА**

**Аннотация:** в статье рассматриваются проблемы развития экономики страны, финансирования науки и научных исследований, фундаментальная наука и научные исследования, финансирование науки как приоритетной сферы вложения инвестиций, сравнения с развитыми странами, рекомендации государственного финансирования фундаментальных научных исследований в условиях санкций, эмбарго, дефицитного бюджета.

**Ключевые слова:** инновация, научно-технологическое развитие, инвестиции, внутренние затраты на науку, санкции, федеральный бюджет, финансирование научных исследований.

В ежегодном послании федеральному собранию на 2017 г. Президент РФ поручил правительству разработать предметный план действий до 2025 года, чтобы Россия нарастила позиции в глобальной экономике. Основное внимание в названном послании уделено запуску масштабной программы развития экономики нового технологического направления. В ее реализации основа на науку, передовые технологии. Стано-

вится очевидным, что только от разумной политики государства в сфере науки, высоких технологий, инновационной активности, вложений финансирования на научные исследования и разработки зависит качество структурных преобразований экономики, способных обеспечить динамичный экономический рост и конкурентоспособность страны на мировых рынках [1; 2]. Рассмотрим (табл. 1) где представлены вложения на научные исследования.

Таблица 1. – затраты на исследования и разработки по видам работ (внутренние) (млн. руб.) [3; 4]

Годы	Внутренние затраты на исследования и разработки	в том числе по видам работ			Годы	Внутренние затраты на исследования и разработки	в том числе по видам работ		
		фундаментальные исследования	прикладные исследования	разработки			фундаментальные исследования	прикладные исследования	разработки
2000	73873,3	9875,7	12117,5	51880,2	2012	655061,7	108160,9	129304,4	417596,4
2005	221119,5	31022,9	36360,2	153736,4	2013	699948,9	114829,1	133788,0	451331,8
2010	489450,8	95881,4	92010,7	301558,7	2014	795407,9	130618,0	155231,4	509558,4
2011	568386,7	106924,0	113096,8	348365,9					

Анализ таблицы 1 показывает, что в 2000 г. из всех внутренних вложений на исследования и разработки 73,9 млрд. руб. – 100%, на фундаментальную науку (ФН) было вложено – 13,2%, прикладную науку (ПН) – 16,4%, научные разработки (НР) – 70,2%. В 2005 г. из всех внутренних вложений 221,1 млрд. руб. – 100% соответственно ФН – 14,0%; ПН – 16,4%; НР – 69,5%. В 2014 г. из всех внутренних вложений 795,4 млрд. руб. – 100% соответственно ФН – 16,4%; ПН – 19,5%; НР – 64,1%. В 2005 г. все внутренние вложения выросли по сравнению с 2000 г. в три раза (299,2%). В 2014 г. по сравнению с 2000 г. почти в 11 раз (1076,3%), по сравнению с 2005 г. в 3,6 раза (359,7%). Следует отметить, что начиная с 2000 г. в России начался период стабилизации экономики и ее управления. До 2007 г. наметился устойчивый, можно сказать экстенсивный прогресс в развитии науки, то есть появилась возможность больше оказывать финансовую поддержку науки.

На всех уровнях управления представляется важным создать действенную систему управления и регулярно проводить финансовый менеджмент вложений в научные исследования и их отдачу. В соотношении всех затрат на науку к расходам федерального бюджета заметен рост, но само соотношение на недостаточно низком уровне. Так, с 2000 г. по 2014 г. удельный вес расходов на науку растет с 1,69% в 2000 г. до почти 3% в 2014 г. Также растут расходы фе-

дерального бюджета на науку по отношению к ВВП, соответственно от 0,24% – 2000 г., до 0,61% – 2014 г. Заметно растут совокупные затраты на науку, в том числе по источникам финансирования (бюджет, собственные средства научных организаций, внебюджетные фонды, средства организаций предпринимательского сектора и др.). Анализ данных в России за период с 1995–2017 гг. показывают, что в целом и по источникам финансирования вложения (затраты) в науку постоянно растут. Вместе с тем, на протяжении 2000–2017 гг. выделение затрат на науку по отношению к ВВП составляли: 1,05% в 2000 г.; 1,13% в 2010 г.; 1,19% в 2014 г.; 1,13% в 2017 г. Хотя наблюдается рост вложений, вместе с тем в сравнении с передовыми странами, можно сделать вывод о невозможности получить достойную отдачу от таких незначительных вложений в науку. Сравним внутренние затраты на исследования и разработки в РФ в расчете на одного исследователя они составляют 90,2 тыс. долл. США в год. В развитых странах в 3–4 раза больше. Например в Швейцарии – 377,5 тыс. долл. США, в США – 333,4 тыс. долл. США, в Японии – 244,0 тыс. долл. США. Учитывая важность приоритета в инновационной экономике фундаментальной науки от которой зависит прорыв в экономике страны рассмотрим ситуацию с финансированием фундаментальных научных исследований [5, С. 13–20].

По итогам заседания Совета при Президенте РФ по науке и образованию, состоявшегося 24 июня 2015 г., Правительству Российской Федерации поручено обеспечить при формировании проектов федерального бюджета на 2016 год и последующие годы объем бюджетных ассигнований на проведение фундаментальных научных исследований в процентном отношении к валовому внутреннему продукту на уровне 2015 г. В 2015 г. ВВП России составил 83232,6 млрд. руб., а на фундаментальные исследования из бюджета было потрачено 120,0 млрд. руб., что составляет 0,144%. Таким образом, общий ежегодный объем бюджетных ассигнований на фундаментальную науку должен составлять на уровне 0,15% ВВП.

В 2016 г. ВВП России составил по предварительным оценкам 86043,6 млрд. руб., а на фундаментальные исследования из бюджета выделено 104,9 млрд. руб., что составляет 0,122%. Следовательно, можно констатировать, что положение о фиксации ежегодного объема бюджетных ассигнований на фундаментальную науку на уровне 0,15% ВВП не выполнено в значительном объеме, то есть не получила фундаментальная наука почти 25 млрд. рублей. Важной проблемой финансирования фундаментальной науки является не соответствие проводимой бюджетной политики

и сложившейся практики осуществления научных исследований в стране. Только нехваткой финансовых ресурсов в условиях кризисных проявлений нельзя объяснять существующие недостатки в финансировании фундаментальной науки. Главные причины в основе не эффективных механизмах финансирования развития экономики. Руководство страны должно рассматривать государственные расходы на фундаментальные научные исследования как стратегические вложения, от которых зависит положение страны на международном уровне, конкурентные преимущества, экономическая безопасность национальной экономики. То есть важно возвести эти финансовые вложения в ранг стратегических, приоритетных инвестиций. Эти инвестиции должны быть на таком оптимальном уровне по объему вложений, который бы обеспечивал формированию статуса государства являющегося производителем инноваций и передовых технологий.

В связи с этим важно соблюдать механизм финансирования, в котором положение об объеме бюджетных ассигнований на фундаментальную науку должны быть не менее уровня 0,15% ВВП. В условиях кризиса, санкций и эмбарго (в табл. 2) предлагаются рекомендации нескольких вариантов финансирования.

Таблица 2. – ВВП и объем финансирования фундаментальных научных исследований в 2018–2020 гг. (прогноз три варианта)

Показатели	Годы		
	2018 г.	2019 г.	2020 г.
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
Базовый вариант ВВП млрд. руб.	94141	96213	98618
Консервативный вариант ВВП млрд. руб.	92757	93870	95748
Целевой вариант ВВП млрд. руб.	95065	98867	103316
Базовый вариант бюдж. ассигнования на фундаментальную науку (млрд. руб.)	141,2	144,3	147,9
Консервативный вариант Бюдж. ассигнования на фундаментальную науку (млрд. руб.)	120,6	122,0	129,2
Целевой вариант бюдж. ассигнования на фундаментальную науку (млрд. руб.)	152,1	158,1	167,3

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Бюдж. ассигнования в% к ВВП базовый вариант	0,15	0,15	0,15
Бюдж. ассигнования в% к ВВП консервативный вариант	0,13	0,13	0,135
Бюдж. ассигнования в% к ВВП целевой вариант	0,16	0,16	0,162

Базовый вариант характеризует развитие российской экономики в условиях сохранения сложной экономической ситуации (кризис, санкции, эмбарго) тенденций изменения внешних факторов при сохранении дефицитной бюджетной политики, в том числе в части социальных обязательств государства. Вариант разработан исходя из умеренной динамики цен на нефть марки Urals на уровне 40 долл. США/барр. в 2017–2020 гг. (рост ВВП прогноз в 2018 г. 102%; в 2019 г. – 102,2%; в 2020 г. – 102,5%). Консервативный вариант рассматривает развитие экономики в условиях более низкой динами-

ки цен на нефть и природный газ. Предполагается, что среднегодовая цена на нефть в 2018 г. снизится до 35 долл. США/барр. и стабилизируется на этом уровне до 2019 г. (рост ВВП прогноз в 2018 г. 100,5%; в 2019 г. – 101,2%; в 2020 г. – 102,0%). Целевой вариант ориентирует на достижение целевых показателей социально-экономического развития и решение задач стратегического планирования. Предполагается выход российской экономики на траекторию устойчивого роста темпами не ниже среднемировых, (рост ВВП прогноз в 2018 г. 103%; в 2019 г. – 104%; в 2020 г. – 104,5%).

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## Section 7. Enterprise economy

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### DEVELOPMENT OF ENTREPRENEURSHIP IN RURAL AREAS OF PLOVDIV REGION

**Abstract:** Plovdiv region has established itself as the most developed industrial region in the country. The industrial enterprises are concentrated mainly in and around the district and other major cities in rural areas rarely found and operate large industrial enterprises. The purpose of the study is to trace the State of entrepreneurship and micro, small and medium-sized enterprises in rural areas in the Plovdiv region. The object of study is the State of entrepreneurship and small and medium-sized enterprises in rural areas. On the basis of the study and the analysis conclusions are formulated for the development of small and medium-sized enterprises in rural areas of Plovdiv district.

**Keywords:** Entrepreneurship, small and medium-sized enterprises, rural areas.

#### **Introduction**

Over the last decade, Plovdiv region has established itself as the most developed industrial region in the country. The industrial enterprises are concentrated mainly in and around the district and other major cities in rural areas very rarely opened and operate large industrial enterprises. So are substantial and are deepening their imbalances in economic activity in the area. As a consequence, in rural areas the level of unemployment is significantly higher. This gives rise to migration of people of working age from villages to cities or abroad, depopulation and the villages, destruction of the technical infrastructure and the housing, a strong decrease in the number of children in settlements in rural areas and closing and destruction of schools and kindergartens, unreasonable increase in rentals of residential properties in the major cities, etc. Deepen differences between living standards of people of working age living in the city – and those in rural areas. These negative so-

cial trends could be mitigated and stopped with the creation of jobs in rural areas, i.e. the development of entrepreneurship. The main activity in that target are enhance entrepreneurial agribusiness and rural tourism. Rural tourism generates additional income for rural families, creating jobs and reducing unemployment, reduced direct emigration from rural areas, contributes to the development of new activities and the diversification of the economy [1, 36–41]. Small and medium-sized enterprises should be the backbone of the economy in rural areas. The status and their development directly affect the living standards of the average resident of this area. Regarding the labor force, predominantly rural and intermediate rural areas are characterized by very low levels of economic activity, which is explained by the small opportunities for work in them. Despite high unemployment, entrepreneurs find it difficult to find a skilled workforce [2, 112]. With the resources and opportunities that hold the people in these areas can

reveal only the micro, small and medium-sized enterprises. In recent years, in mountainous and rural areas of our country are built or upgraded to meet the needs of rural tourism private guest houses, family hotels, villas, private rooms and other hotel sites of family type [3, 32–35]. It is the family type of micro, small and medium enterprises in rural areas. All this makes the need for a study of the status and development of entrepreneurship and small and medium-sized enterprises in rural areas.

Entrepreneurship is a process of creation and development of an economic activity through a combination of risk-taking, creativity and innovation. The entrepreneurial process involves all the functions, activities and actions related to the opening opportunities and the creation of an organization for implementation [4, 32–67]. According to [5, 23–36; 6, 45–72] the entrepreneurial behavior can be found in every human action, every „economic“ man apply entrepreneurial actions. The true entrepreneur, in the conditions of competition, is distinguished by the fact that thanks to its vigilance and expertise in market environment, using a specific situation, looking for new

resources and approaches, and as risk and develop a real creative work, embarks to benefit. According to modern understanding the essence of entrepreneurship is expressed in the creation of a new organization [7, 15–35; 8, 23–56], etc. behavioral approach examines the entrepreneur as a person implement a set of activities aimed at creating an organization. Therefore, in order to explore and promote the development of entrepreneurship, you need to examine the process of creating and functioning of the new organization.

The purpose of this article is to follow state of entrepreneurship and micro, small and medium-sized enterprises in rural areas in the Plovdiv region. While based on the classic understanding of the essence of entrepreneurship, we accept and adhere to a behavioral approach to his research. That's why we examine and analyze the establishment and operation of micro, small and medium-sized enterprises.

#### Materials and Methods

In examining the criteria adopted for micro, small and medium-sized enterprises according to the law on small and medium-sized enterprises-SG No.59 of July 21, 2006.

Table 1. – Criteria for micro, small and medium-sized enterprises

criteria	categories of undertakings		
	micro	a little	medium
number of personnel	up to 10	10–50	over 50
annual turnover EUR	up to 4 million.	up to \$20 million.	up to 100 million.
total value of assets	up to 4 million.	up to \$20 million.	up to 85 million dollars.

Source: *The Small and Medium-Sized Enterprises Act, SG No. 59 of July 21, 2006*

Dynamic small and medium-sized enterprises are defined according to the following criteria, adopted by the EU: value and growth of turnover, as the growth in turnover compared to the previous year should be over 10%; number of employed full time, the undertaking must have more than 10 people employed full time; ownership of the entrepreneur must be over 50% of the total value of the assets of the undertaking; value of integrated innovation – innovative products and services, introduction of new technology or organization of production, entering new markets.

In the present study covered municipalities in Plovdiv region, belonging to the category of rural areas in villages in the Plovdiv region, 25% of the population live in predominantly rural area with population are the municipalities of Sadovo and Brezovo – 74% of their total entirely agricultural population demographics are the municipalities of Kaloyanovo, Mariza, Rodopi. The micro, small and medium-sized enterprises are active in agribusiness, services, trade, rural and eco-tourism. It is rural tourism in these areas appears to be a form of diversification and economic leverage

for growth. On the other side of the rural tourism process are people, who offer the product. They are driven mainly by their economical goals, by the intention to ameliorate their social status [9, 115–120]. For the purposes of the study are conducted interviews in a large number of micro, small and medium-sized enterprises. Data is also collected at the level NUTS3 (district) and NUTS4 (municipalities) and is based on survey data from the district development strategy. The survey covers the period 2010–2015. In this study were used the following methods: statistical analysis and synthesis, poll, comparative method.

### Results and discussion

We are following the conditions for the development of entrepreneurship as these are socio-economic factors that affect directly and are dynamic. There are 683,000 inhabitants in the Plovdiv region, which represents 9.3% of the country's population. In Plovdiv live 49.5% of the population of the region. In the surveyed rural municipalities, the population is under 5% of the population of the district. Over the last 10 years, the area's population has fallen by 4.6%. The reduction of the population led to a reduction in the workforce, and hence the economic potential in the area. It's going to be a steady trend of increasing urban population and reduction of agriculture. The trend of reducing the absolute number and the proportion of the population under 15 years and increasing the proportion of the population 65 years and over. This leads to a process of demographic ageing. In 2001, under the age of 15, they were 14.9% of the population and 13.1% in 2015. With a large proportion of the young population (15 years of age) is municipality Sadovo – 15.2%. With the unfavourable age structure is the population in municipality Brezovo where 34.9% of the population is over 64 years, in municipality Kaloyanovo – 30.4%. The trend of the ageing of the population leads to changes in the distribution of the population, and under the above working age. Plovdiv region is distinguished from the country with a higher share of the population over working age, with a lower

share of the working-age population. With the highest proportion of the population in working age is municipality Plovdiv (65.4%). With a low share of the working-age population is municipality Brezovo 46.8%, and municipality Kaloyanovo – 51.9%. There are three main ethnic groups of population in rural areas: Bulgarian, Turkish and Roma. The Bulgarian ethnic group features high school (22.1% higher and with an average of 47.1%). The other two main ethnic groups have an unfavorable educational structure. For the Turkish ethnic group, 3.1% have higher education and 24.4% have secondary education, and the Roma ethnic group has the high percentage of never attending school – 10.5%. According to level of education – 44.2% of the inhabitants of the villages are having completed at least upper secondary education. Emerging trend of an increase in the number and proportion of the population with secondary and higher education in reducing the number of people with primary education. This leads to the increase of the quality characteristics of human capital. Over 35% of persons over 15 years of age, employed on the farm, work full time, while about 20% are part-time, 25% of persons of working age and work on the farm and beyond; 10% are employed only outside the farm, as these are mostly young people. Migration processes also affect the quality of the labor resources in rural areas. Investigation shows that migrate mainly young people – the average age of about 30 years, and also persons with higher education. In the economy of the municipality of Plovdiv the service sector dominates, it generates a 56% of the total gross value added of the field, followed by industry with 38.5% and agriculture with 4.6%. Field provides 7.5% of the national gross domestic product. Gross domestic product per capita in the region is EUR7530 in average for the country 9359 and 6525 EUR for the South Central region. The level of economic development, measured by this indicator, shows the backlog of Plovdiv area on average.

Foreign direct investment in non-financial enterprises sector in the Plovdiv region represent

approximately 5.8% of the total for the country. Half of all investments are realized on the territory of the common. Plovdiv, followed by municipality Maritza.

The highest share of micro-enterprises (up to 9 persons employed) – 91.4% of the total, producing 15.6% of value of production. Small enterprises (10–49 occupied) 7.1% and have created 19.3% of the volume of production. The proportion of the average (from 50 to 249 occupied) and large (more than 250 employed) of the total number of undertakings is negligible – respectively 1.3 and 0.2%, but production in these reaches a total of 65.1%. The surveyed rural areas are in the following municipalities: municipality Brezovo has a predominantly rural population. Agriculture, light upheaval and services have been developed. In the municipality there are registered 189 enterprises, of which 175 are micro, 11 small and 3 medium. Municipality has traditions in the production of wine, pink and other essential oils, milk and meat processing industry, different types of tourism. Municipality Sadovo is a predominantly rural population. Dominant is agriculture, mainly the production of cereals, peanuts and vegetables. Developed is the food industry. Registered are

business entity 337 as almost all are mikrofirmi. Municipality Kaloyanovo is entirely rural. Agriculture – cereals, fruits and vegetables, food, woodworking, furniture and clothing industry were developed. In the municipality there are registered 339 enterprises, the number of those with up to 9 employees being the main ones. Municipality Rodopi is an entirely rural municipality. Agriculture has been developed, involving the majority of the population. There are 1007 companies in the municipality, which have the majority of micro-enterprises that are mainly in the light industry and the processing of agricultural raw materials. Maritsa municipality is completely rural municipality. Agriculture is a major activity in economic life. Vegetable-growing, grain and technical crops have been developed. Because of its proximity to the regional center, the municipality is attractive for investment. According to the poll of working age people in rural areas to entrepreneurship for various reasons, the main of which are: lack of income and, to a lesser extent, striving for higher incomes; the absence of any alternative for income; striving for independence; the opening of the market the opportunity to realize a particular product and to provide income.

Table 2. – Number of micro, small and medium enterprises in rural areas in Plovdiv by municipality, 2015

municipalities	micro, small and medium-sized enterprises						
	total	micro		small		medium	
		number of	%	number of	%	number of	%
Kaloyanovo	336	204	60.71	124	36.90	8	2.38
Maritza	109	92	85.32	12	11.00	5	4.58
Rodopi	1007	904	89.77	92	9.13	11	1.09
Brezovo	185	169	91.89	10	5.40	3	1.62
Sadovo	335	323	96.41	8	2.38	4	1.19
Area	32275	29453	91.2	2356	7.3	420	1.3

Source: research of the author

Table 3. – Number of micro, small and medium enterprises per 1000 inhabitants in rural areas in municipalities

SMES of 1000 inhabitants	yr 2010.	2015.	Dynamics 2010/2011 = 100
1	2	3	4
Kaloyanovo municipality			
total	11.20	13.04	116.42



<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
with up to 10 busy	6.80	8.02	117.94
10–50 busy	4.13	3.87	93.70
Maritsa municipality			
total	2.18	3.25	149.08
with up to 10 busy	1.84	2.34	127.17
10–50 employed 0.24 0.37 154.16			
Rodopi municipality			
total	22.37	24.78	110.77
with up to 10 busy 18.74 20.08 107.15			
10–50 busy	2.24	2.31	103.12
the municipality of Sadovo			
total	13.42	13.36	99.55
with up to 10 busy	12.92	13.17	101.93
10–50 occupied	0.32	0.28	87.50
the municipality of Brezovo			
total	12.34	13.27	107.53
with up to 10 busy	10.56	11.15	105.58
10–50 occupied	0.72	0.69	95.83

*Source: research of the author*

Extensive path of development of the economy in the rural areas – by increasing the number of firms is characteristic of all surveyed municipalities. The greatest increase in the number of small and medium-sized enterprises is found in municipality Maritza-45%, where it is recorded and the largest foreign investment. In second place is municipality Kaloyanovo – by 16%. In the other municipalities, the increase in the number of small and medium-sized enterprises through 2015 compared to 2010 from 1 up to 7%, which is negligible, in addition, the years there was variation in the number of active enterprises. The many small and medium-sized enterprises of 1000 inhabitants have in municipality Rhodopes – 24.78 in 2015, in the municipalities of Brezovo, Kaloyanovo and Sadovo – about 13 small and medium-sized enterprises. The greatest increase in small and medium-sized enterprises of 1000 inhabitants during the investigation period in municipality Rodopi. Dynamics of the turnover of small and medium-sized

enterprises gives an idea of their development during the investigation period. The highest proportion of the number of small and medium-sized enterprises with turnover growth with only 5% is found in General. Sadovo-18.80% of total, at 63 the number of small and medium-sized enterprises. In municipality Maritza only 2.75% of the total turnover growth have to 5%. It is in municipality Maritza is found the highest proportion of small and medium-sized enterprises-nearly 50% achieving the 100% or more increase in turnover. 35.77% of small and medium-sized enterprises achieved growth in turnover of up to 50%. So municipality Maritza was recognized as the most sustainable developing economy.

The decrease in turnover is taken into account in the 5.35% of small and medium-sized enterprises in municipality Kaloyanovo, and in 4.58% of small and medium-sized enterprises in municipality Maritza. The large number of small and medium-sized enterprises – 42, (12.54%) in which is found



a reduction in turnover has in municipality Sadovo, as during the investigation period, this number is increased by 23.5%. In municipality Brezovo with 17.39% increases the number of small and medium-sized enterprises with turnover reduction. Reduces

the number of small and medium-sized enterprises with a reduction in the turnover in municipality Rhodopes – to 23.81%, in municipality Maritza – with 28.58%, in municipality Kaloyanovo, with 33.34%.

Table 4. – Number of micro, small and medium enterprises in rural areas according to turnover dynamics, %

dynamics of the turnover, %	yr 2010.		2015.	
	number of	% of total	number of	% of total
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Kaloyanovo municipality				
0–5	10	20.06	6	13.98
6–10	8	16.96	9	18.75
11–50	16	31.83	13	27.68
51–100	10	21.80	16	34.23
reduction	5	9.35	2	5.36
respondents	49	100.00	46	100.00
Maritsa municipality				
0–5	4	8.0	1	2.75
6–10	5	10.66	4	8.25
11–50	17	38.66	18	35.77
51–100	15	33.34	24	48.62
reduction	4	9.33	2	4.58
respondents	45	100.00	49	100.00
Rodopi municipality				
0–5	4	7.67	3	5.86
6–10	5	11.00	5	11.23
11–50	18	37.13	19	40.51
51–100	21	42.08	19	40.82
reduction	1	2.12	1	1.58
respondents	49	100.00	47	100.00
the municipality of Sadovo				
0–5	7	14.87	8	18.80
6–10	16	34.25	13	28.96
11–50	12	26.58	11	23.58
51–100	6	13.60	7	16.12
reduction	5	10.76	6	12.54
respondents	46	100.00	45	100.00

1	2	3	4	5
the municipality of Brezovo				
0–5	4	9.30	8	17.77
6–10	15	30.81	15	33.34
11–50	14	29.65	9	20.00
51–100	8	16.86	6	13.13
reduction	6	13.37	7	15.55
respondents	47	100.00	45	100.00

Source: research of the author

Note: there is a mean of 51 to 100 and more% growth

Given that in these municipalities there is a high proportion of small and medium-sized enterprises with a high growth rate of turnover – over 40%, it can be assumed the process of stabilisation of their activities and of the economy of these municipalities. In municipality Rhodope and in municipality Maritza has a dynamically developing small and medium-sized enterprises. According to the criteria: in municipality Maritza 54.16% of the total number have more than 10 employed full time, in municipality Rhodope – 29.16%. According to the criterion of the enterprise's turnover growth over 10% in total. Maritza 84.39% of small and medium-sized enterprises, and in municipality Rhodopes – 81.33% fall dynamically developing. In the other municipalities surveyed small and medium-sized enterprises develop traditional and do not meet the criteria for dynamic enterprises. They have more short-term goals, more highly dependent on their environment, in many cases, strive for survival. On value criteria and dynamics of investments in business dynamic small and medium-sized enterprises invest more in the development of the business, and are oriented towards long-term development. The majority, about 85% of the capital in small and medium-sized enterprises are owned by the entrepreneur and his family, i.e. the owner has complete control over its undertaking. Major barriers to entrepreneurship in rural areas in the Plovdiv area are: shortage of financial capital, high interest rates to kreditirane, taxes,

payments to social and health insurance, the limited market demand.

### Conclusions

In rural areas in the Plovdiv region has a very large number of small and medium-sized enterprises, as over 90% of these are micro-enterprises; Municipality Maritza was recognized as the most sustainable developing economy. For the municipalities of Rhodopes and Kaloyanovo may be considered to develop a process of stabilization of the activity of small and medium-sized enterprises and the economy; Municipalities Sadovo, where agriculture dominates, the difficulties of this sector are reflected in its overall economic development; In municipality Rhodope and in municipality Maritza has a dynamically developing small and medium-sized enterprises. In the other municipalities surveyed small and medium-sized enterprises develop traditional and do not meet the criteria for dynamic enterprises; Dynamic small and medium-sized enterprises have a wide territorial market, traditional – more limited local market; Major competitive advantages for the small and medium-sized enterprises are the low cost of raw materials, product quality and less opportunity for marketing activities; The limited market demand in rural areas severely limits the production and operation of micro and small enterprises; The possibility of realization of production on the European markets is small due to the inability to meet the criteria for quality and transport costs;

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## Section 8. Economy of nature management

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### EFFECTIVE USE OF LAND IN URBAN DEVELOPMENT

**Abstract:** Intensive use of lands in the construction of cities is considered in the article. The analysis, approaches and experience of foreign countries on land-use assessment are carried out. The link between society and nature problems statement deserves further attention. Great attention is paid to issues of land value and housing of domestic and foreign countries.

**Keywords:** effectiveness, use, land, housing, city, building, land-use, land tenure

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### ЭФФЕКТИВНОЕ ИСПОЛЬЗОВАНИЕ ЗЕМЕЛЬ ПРИ ЗАСТРОЙКЕ ГОРОДОВ

**Аннотация:** Рассмотрено интенсивное использование земель при застройке городов. Проведены анализ, подходы и опыт зарубежных стран по оценке землепользования. Заслуживают внимания в части постановки проблем взаимосвязь общества и природы. Большое внимание уделяется вопросам стоимости земли и жилья отечественных и зарубежных стран.

**Ключевые слова:** эффективность, использование, земля, жилищное, город, застройка, землепользование, землевладение.

За последние годы (2005–2017 гг.) в Азербайджане и в том числе в г. Баку осуществлены значительные градостроительные работы. В городах и поселках страны построены жилые дома общей площадью 24,9 млн.кв.метров, в том числе в г. Баку 4,583 млн.кв.метров. Теперь в среднем на каждого городского жителя в жилищном фонде приходится более 17,9 кв.метров общей площади квартир. Построено значительное количество

общественных зданий различного назначения. Осуществлены значительные работы по развитию коммунального хозяйства населенных мест, систем общественного транспорта, инженерного оборудования, благоустройства и озеленения.

Новые районы многих городов страны отвечают современным требованиям в отношении планировки, застройки и архитектурного облика. Осуществлены большие работы по

реконструкции сложившейся застройки в существующих городах. Ведется систематическая работа по улучшению сельских населенных мест, превращению сел и деревень в благоустроенные поселки городского типа. Проводятся мероприятия по охране природной среды, улучшению санитарного состояния атмосферного воздуха и водоемов в городах.

Успехи, достигнутые в последние годы в жилищной сфере огромны. Однако в этой области еще есть нерешенные проблемы.

Главной целью в области жилищной сферы является создание наиболее благоприятных условий труда быта и отдыха населения, дальнейшего материального и культурного уровня жизни, всестороннего интеллектуального и физического развития человека, улучшения здоровья и продления периода интенсивной трудовой деятельности людей.

Достижение этой цели связано с дальнейшим улучшением жилищного строительства в процессе реализации генеральных планов городов, улучшение качества строительства жилых и общественных зданий и сооружений, а также наиболее рациональным использованием финансовых, материальных и трудовых ресурсов, направляемых в строительство и на развитие отраслей непродовственной сферы экономики страны.

В стратегической дорожной карте Азербайджана намечено завершение к 2025 году капитальной реконструкции городов, развитие и совершенствование их социальной инфраструктуры. После 2025 года в каждом районе страны намечено создание жилищных секторов, в компетенцию которых входит обеспечение населения высококачественным жильем и объектами социально-культурного назначения. До 2020 года в строительном секторе страны прогнозируется 10 тысяч новых рабочих мест, что потребует 900 млн. ман. инвестиций как за счет государства, так и с привлечением частных строительных компаний.

Рост жилищного строительства и увеличение объема реконструкции, модернизации и капиталь-

ного ремонта жилищного фонда требуют совершенствования жилищной и земельной политики.

В связи с непомерным возрастанием цен на земельные участки городских территорий возникает стремление увеличить жилую площадь за счет этажности, что способствует совершенствованию строительной техники и воздействию высокоэтажных строений. На базе развитой страной техники происходит постепенное повышение уровня благоустройства городского жилища [2, С. 20–25].

Экономия и более интенсивное использование территорий в застройке городов является важным резервом повышения эффективности капитальных вложений в строительство, инженерное оборудование и благоустройство и т.п.

На современном этапе развития городов интенсификация является генеральным направлением в использовании земель. Она проводится на основе повышения плотности застройки, совершенствования архитектурно-планировочных приемов и других направлений научно-технического прогресса.

Важной особенностью строительства как отрасли материального производства и строительной продукции является территориальная закреплённость. Другим существенным вопросом является относительная длительность производственного цикла. Для отражения этих явлений введем понятие «строительное землепользование», т.е. пользование землей в определенном порядке в связи со строительством объектов.

В данном случае в качестве землепользователей на период отвода участка для возведения объекта выступают строительные компании. Важными его задачами являются изучение структуры и тенденций динамики земельных ресурсов, особенностей их пользования при строительстве различных объектов, разработка и внедрение научно-обоснованных норм выделения земель. В связи с этим особую актуальность приобретают меры по более интенсивному ис-



пользованию освоенных застройкой земель, в том числе совершенствование их экономической оценки. При проектировании нередко не проводится необходимая оценка уровня интенсивности использования земель под застройку, что связано и с недостаточной теоретической разработкой этих вопросов.

Регулирование эффективности землепользования в городах республики осуществляется с помощью административных, рыночных и смешанных методов. Административные регламентируют основные правила землепользования в интересах государства и направлены на недопущение бесхозяйственности в использовании земельных участков и загрязнения экологии. Рыночные методы определяют суммы налога в бюджет за использование земельных участков, платежи за изъятие земель под новое строительство, а также выплату льгот за эффективное использование земли. Смешанные методы характеризуют сочетание административных и рыночных механизмов. Они направлены на материально-техническое и финансовое обеспечение программ по охране экологии, окружающей среды и улучшение городского землепользования.

Выполнение жилищной программы в стране неразрывно связано с состоянием землепользования.

Землепользование в Азербайджане платное, это: земельный налог, арендная плата, нормативная цена земли. Земельный налог вносят домовладельцы и землепользователи. Арендная плата предусмотрена для арендаторов земельных участков. Нормативная цена рассчитывается при передаче земли по наследству, при дарении и для коллективно-долевых собственников земли.

В большинстве зарубежных стран используются два вида оценки землевладений: массовую и индивидуальную. При массовом способе оценивается не отдельный объект (здание, сооружение), а комплекс сравнительно однородных объектов. Массовая оценка производится регулярно, а индивидуальная – по требованию собственника.

Анализируя опыт развитых зарубежных стран, можно выделить ряд подходов при массовой оценке городского землепользования.

Первый подход основывается на изучении различных мнений аналитиков-экспертов о рыночной стоимости объекта. Положительная сторона данного подхода – достаточно высокая достоверность при нехватке информации, а его недостаток – в дороговизне стоимости.

При втором подходе с помощью современных методов математического анализа и статистической системы обработки информации значительного числа аналогичных объектов определяется стоимость объекта.

В зарубежной практике в основном используется второй подход, так как статистические методы позволяют добиться более надежных результатов по сравнению с экспертной оценкой.

Однако оптимальным на наш взгляд для определения стоимости землевладений и объектов городской застройки является комплексный подход, основанный на сочетании обоих вышеуказанных методов.

Комплексный подход к определению стоимости объектов жилой недвижимости позволит определять и экономически обосновывать нормативы землепользования, устанавливать оптимальную величину земельных платежей, исключать противоречия между жителями городов и земли-домовладельцами. Зачастую из-за неурегулирования землепользования узкокоммерческие интересы отдельных регионов вступают вразрез с макроэкономическими требованиями центральных государственных органов.

Во многих странах правовое регулирование землепользования выступает как основа региональной экономической политики [6, С. 47–52; 2, С. 20–25].

Рост крупнейших городов приводит к неуклонному повышению стоимости земельных участков в отдельных районах, в особенности в центре города. Возведенные ранее на этих

участках строения не соответствуют изменившимся условиям и требованиям, их сносят и заменяют более современными. Жилище в городе становится товаром, обладатель которого обогатится за счет потребителей, взимая с них повышенную квартирную плату, из которой только третья часть расходуется на содержание жилищ.

Стремление домовладельцев увеличить свой доход и уменьшить до минимума удельный вес эксплуатационных расходов, падающих на каждую квартиру, привело строительству так называемых жилых домов с большим количеством небольших квартир и комнат сдаваемых в наем. Это повлияло на размеры, объемы и вид домов, увеличение их этажности и плотности застройки или земельных городских участков. Землевладельцы же, стремясь увеличить количество земельных участков, чтобы получить больший доход, разбивали свои владения на мелкие участки, которые продавали застройщикам. В стране это привело к хаотичной застройке городов с узкими тесными улицами, переулками и тупиками.

Работы зарубежных ученых заслуживают внимания в части постановки проблем взаимосвязи общества и природы, информации о наличии и структуре земель в сопоставлении с объемами развития производства, а также экономико-математических моделей и методов, анализа ресурсов в статике и динамике, выявлении прямых и обратных связей. Однако они имеют ряд серьезных недостатков, основными из которых являются следующие:

- мир рассматривается как единая система развития, без учета качественно новых возможностей рыночного хозяйства и без выделения развитых и развивающихся стран;
- недоучет достижений научно-технического прогресса и социальной сферы в развитии производительных сил общества, которые могут быть решающими в установлении взаимоотношений общества и природы;
- нереальность предложений об искусственном замедлении производства, сокращении чис-

ленности населения, отказа одних стран от использования земель в пользу других, «бедных стран».

С развитием зарубежных стран, ростом производства все очевиднее становилась ограниченность земельных и других природных ресурсов. Сокращение свободных территорий привело к резкому повышению стоимости земли. Очень высока цена земли в крупнейших городах США, Японии и ряда других стран. В Японии земля примерно в 10 раз дороже, чем в Европе. В этих условиях для экономии территорий применяются градостроительные меры повышения плотности и этажности застройки, использование подземного пространства для размещения предприятий сферы обслуживания, инженерных сооружений и т.п.

В США и ряде других стран созданы государственные органы (в центре и на местах) по охране среды. Однако деятельность этих органов вызвала сопротивления монополий, которые стали ссылаться на дополнительные расходы, снижение прибыли, ухудшение экономического положения и предлагать меры о переносе затрат на налогоплательщиков.

Важнейшим фактором в соотношении между потребностью в земле и ее наличием является возрастающий спрос на территории для городских нужд.

В США городская застройка занимает 4% территории страны [3, С. 67–75].

Потребность в земле для городских нужд прогнозируется на основе тенденций прошлых лет, демографических изменений стоимости энергии стимулирующей компактное размещение объектов и с учетом других факторов.

Интенсивный территориальный рост городов отмечается в Великобритании и других странах Западной Европы. Он сопровождается изъятием под застройку и снижением ценности сельскохозяйственных земель. В странах западной Европы территории городской застройки составляют в среднем около 7% общей земельной площади, а в Нидерландах и Бельгии – 15, Германии – 12,

Италии и Франции 4–5, Великобритании – 11%, Венгрии – 9% (Крилов, 2005).

Большое внимание уделяется вопросам стоимости земли. Например, в Германии земельные участки в черте Мюнхена стоят от 600 до 900 марок, а в ближайшем пригороде – 400 марок/м<sup>2</sup>. В 60 км западнее Мюнхена участки стоят 55 марок/кв.м, а севернее где нет сообщения общественным транспортом, стоимость участков составляет около 125 марок/кв.м территории [5, С. 26–36]. В связи с этим, для получения максимальной прибыли используются градостроительные, коммерческие и другие меры.

В Азербайджане земли городов и поселков городского типа используются в соответствии с генеральными планами. Весьма важно обеспечить их развитие за счет реконструкции существующей застройки и размещения строительства на свободных землях в границах города. Такие возможности, как правило, имеются, и это направление принято основным.

Так, жилищное строительство в г. Баку концентрируется: а) на свободной территории в городе и на его окраинах; б) в сложившейся части города путем его реконструкции; в) на городских территориях, занятых промышленными и складскими предприятиями, путем рационального использования этих территорий; г) в городах-спутниках [9, С. 101–122].

Современная застройка г. Баку, особенно его центральной части, характеризуется очень высокой плотностью, в связи с чем дальнейшая концентрация нового жилищного строительства в застроенной части города не может быть осуществлена без значительного сноса существующего жилого фонда.

Используя накопленный зарубежный опыт, с целью оптимального обеспечения населения качественным жильем, в Азербайджане в 2016 году образовано «Государственное агентство жилищного строительства», в компетенцию которого входит распоряжение неиспользуемых государ-

ством земель, муниципалитетов и местных исполнительных властей. При Агентстве создано ООО «Mida», которое будет заниматься разработкой экономичных строительных проектов и удешевлением стоимости земельных участков.

Анализируя опыт зарубежных стран, можно перенять много полезного для улучшения обеспеченности жильем и снижения его стоимости для отдельных категорий населения. К примеру, в Турции создана специальная Организация ТОКІ, которая занимается разработкой проектов для мало и среднеобеспеченных семей. При средней рыночной цене за 1 м<sup>2</sup> жилой площади в 620\$ (долларов) США, цена по указанным проектам составляет 420\$ (долларов) США [1, С. 26–32].

В ТОКІ Бразилии действует Государственная Программа «Minha Casa Minha Vida», при которой государственные банки выдают малообеспеченным семьям ипотечные кредиты (А. Сaeza, Т. Monacelli & Т. Stracca (2013)). В Китайской Народной Республике государственные земли передаются населению в аренду сроком на 70 лет [7, С. 102–111].

В Азербайджане особенно в крупных городах рыночные цены на жилье достаточно высоки. Так, в центре Баку цена 1 м<sup>2</sup> жилой площади колеблется в пределах 1750–2940\$ (долларов) США.

Использование свободных земельных участков, находящихся в собственности государства, экономное расходование всех прочих ресурсов, несомненно, будет способствовать уменьшению стоимости жилищного строительства.

Конкретные меры по реализации земельной политики в городах сводятся главным образом к:

- намеченной плановой застройке отдельных жилых комплексов;
- рациональному использованию земли и ответственности застройщика;
- недопущению необоснованного расширения границ города;
- учету национальных, региональных и местных особенностей при возведении жилья,



бережному сохранению природного и исторического наследия.

Исходя из вышеизложенного, можно определить землепользование как механизм рационального хозяйствования на данной территории, способствующий улучшению экономических и экологических характеристик земельных участков.

Цель рационального землепользования предполагает взаимосвязанность интересов непосредственных землепользователей при условии экономного использования ресурсов без ущерба для здоровой экологии города, региона, республики. Требования покупателей жилья в настоящее время сводятся не только к получению квартиры или дома, но и чистоте окружающей среды, удобству передвижения, связанного с минимальным радиусом, нахождения в данном районе проживания станций метрополитена, остановок общественного транспорта и других факторов.

Подход к механизму эффективного землепользования должен основываться на:

- составлении и реализации городских и региональных программ землепользования;
- предоставлении земельных участков под новое строительство при обязательном условии их эффективного использования;
- основе единой методики нормативов землепользования;
- систематическом контроле за состоянием окружающей среды и необходимости финансирования мероприятий по ее охране.

Неэффективное использование земли приводит к засорению и замусориванию городских окраин, резкому уменьшению сельхозугодий, некомфортности проживания жителей, увеличению стоимости строительства и инженерных коммуникаций.

Регулирование земельного рынка является одним из факторов эффективности землепользования. Земельный рынок предполагает право собственности (владение, пользование, распоряжение), право передачи (аренда, залог,

продажа) и возможность конкуренции (выбор участников купли-продажи), налог на земельные участки. Социальную основу земельных отношений в городах и регионах составляют предприятия, строительные компании различные учреждения и физические лица. Они владеют земельными участками, вправе приобретать дополнительные территории, получать доходы от собственных землевладений. С развитием земельного рынка появляется возможность установления платы за землю.

Рост потребностей общества обуславливает расширение использования земельных ресурсов в качестве территориальной основы жилищного строительства и как средства производства в сельском хозяйстве, что постепенно приводит к дефициту земель.

Бережное использование территорий в застройке городов позволяет существенно снизить затраты на инженерное оборудование и благоустройство, сократить эксплуатационные расходы, улучшить условия проживания населения.

Главным направлением рационального использования территорий городов и охраны продуктивных земель являются: улучшение проектных решений, совершенствование прогнозирования, планирования и управления, повышение эффективности использования земель при строительстве и эксплуатации объектов, стимулирование бережного использования и охраны земель.

Объекты жилищного строительства в целом характеризуются высоким уровнем землеемкости. Наряду со снижением землепотребности объектов, интенсивное использование земель связано с качественной и своевременной рекультивацией территорий, нарушенных при строительстве. Имеется необходимость дальнейшего совершенствования приемов восстановления и более рационального использования земель, нарушенных в результате развития застройки городов.

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## Section 9. Economy, organization

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### UNTERNEHMERRISIKEN IM MECHANISMUS DER STAATLICHEN PRIVATEN PARTNERSCHAFT

**Abstrakt:** Die Aktualität des untersuchten Problems ist durch das Problem des unternehmerischen Risikos im System der öffentlich-privaten Partnerschaft bedingt, das ein der wichtigsten in der modernen Wirtschaftstheorie und -praxis des ökonomischen Managements ist. Ziel des Artikels ist es, das Konzept einer langfristigen Strategie für die nachhaltige Entwicklung der industriellen Infrastruktur und der Wirtschaft als Ganzes zu entwickeln. Um dieses Problem zu analysieren und neu auftretende Probleme zu lösen, müssen geeignete methodische Ansätze entwickelt werden, deren integraler Bestandteil eine umfassende Bewertung der Risiken, Methoden zu ihrer Reduzierung und Diversifizierung der Wirtschaft sein sollte.

**Schlüsselwörter:** Unternehmertum, Risiko, Risikomanagement, unternehmerische Ressourcen, Entwicklungsstrategie, staatliche Unterstützung, innovatives Unternehmertum.

Risiko ist ein Ereignis, das unter Unsicherheit zufallsmäßig ist und drei wirtschaftliche Ergebnisse ermöglicht [1]:

- 1) negativ, d.h. Schaden, Verlust;
- 2) positiv, d.h. Vorteil, Gewinn;
- 3) Null (kein Schaden, kein Vorteil).

Das Risikomanagement umfasst vier Stufen [1]:

- Definition der Risikoneigung (Zuweisung strategischer Tätigkeitsrichtungen, Reduktion oder Verweigerung von Nicht-Vorrang- oder Nicht-Kern-Richtungen);
- Management auf der Ebene einzelner Tätigkeitsrichtungen (Verteilung von Verantwortung und Kapital, unabhängige Kontrolle, Umsetzung eines integrierten Ansatzes);
- Kontrolle über die Ergebnisse der Tätigkeiten (Einrichtung einer Informationsdatenbank, Audits, Entwicklung eines Berichtssystems);

– Produktion von Stimuli für verantwortliche Personen (Förderung der Ablehnung inakzeptabler Risiken durch Belohnungen und andere Förderungen).

Gleichzeitig stellt sich die Frage, welche Risiken der Staat zu tragen hat, welche er einem privaten Partner überlassen und welche er in einem bestimmten Verhältnis mit ihm teilen soll,

Das heißt, die Aufgabe besteht darin, die Verteilung der Risiken zwischen den Partnern zu optimieren.

Verschiedene Studien zeigen, dass die optimale Verteilung von Risiken erhebliche Auswirkungen auf die Erreichung von VfM hat (zusammen mit Projektspezifikationen, die auf der Notwendigkeit basieren, ein spezifisches Ergebnis zu erzielen, und der Langfristigkeit der Verträge).

Die Notwendigkeit, Risiken zwischen öffentlichen und privaten Partnern bei der Umsetzung eines PPP-Projekts (Public-Private-Partnership) zu teilen, ist

auf eine Reihe von objektiven Gründen zurückzuführen, von denen die wichtigsten die folgenden sind [2]:

1. Aufteilung der Verantwortung. Aufgrund der direkten Umsetzung des Projekts durch den privaten Partner wird ein wesentlicher Teil der Risiken auf den privaten Partner übertragen. Zur gleichen Zeit, für das Endergebnis des Projekts, ist der Staatspartner verantwortlich, weil das Erreichen des Ergebnisses des Projekts das Ziel seiner Teilnahme an der Partnerschaft ist. Diese Aufteilung der Zuständigkeiten bestimmt das Interesse beider Partner an einer effektiveren Umsetzung des PPP-Projekts und schafft auch die Voraussetzungen, um die Verantwortung für mögliche Gestaltungsrisiken zwischen ihnen zu verteilen.

2. Verschiedene Möglichkeiten für das Risikomanagement. Jeder der Partner hat seinen eigenen Einflussbereich und sein Arsenal an Mitteln zur Beeinflussung verschiedener Projektrisiken, die die unterschiedlichen Kosten des Risikomanagements durch verschiedene Partner und folglich die unterschiedlichen Kosten des Projekts bestimmen. Aufgrund der Verteilung der Risiken können die Kosten des Projekts im Vergleich zu den Kosten für die Umsetzung durch die einzelnen Partner sinken.

3. Begrenzte finanzielle Leistungsfähigkeit. Die finanzielle Kapazität und damit die Fähigkeit, die Risiken jedes Partners zu tragen, ist begrenzt. Durch die Kombination der finanziellen Möglichkeiten beider Partner können wir ein größeres Risiko abdecken und die Nachhaltigkeit des PPP-Projekts sicherstellen.

4. Das Problem: Auftraggeber-Vermittler. Der Staat in den meisten PPP-Projekten fungiert in der Tat als Auftraggeber und der private Partner als Vermittler, was zum Problem eines Hauptagenten führt. In diesem Zusammenhang kann die Verteilung der Risiken als Instrument zur Lösung dieses Problems dienen, indem Verantwortlichkeiten und Geldstrom zwischen den Partnern aufgeteilt werden, wodurch Anreize für die Erfüllung ihrer Verpflichtungen geschaffen werden.

Die optimale Verteilung der Risiken kann sich signifikant positiv auf das Projekt auswirken, ansonsten kann die Effektivität der Implementierung abnehmen und zusätzliche Projektrisiken entstehen. In der Praxis hängt der Prozess der Risikoverteilung weitgehend von der Verhandlungsmacht der Parteien ab und ist weitgehend intuitiv, was nicht zu seiner Wirksamkeit beiträgt. Oft verlagert die stärkere Seite das Risiko, dass sie nicht auf die schwächere Seite gelangen will. In diesem Fall ist die Verteilung der Risiken in der Regel nicht effektiv.

Die meisten Publikationen, die sich mit der Verteilung von Risiken zwischen Partnern in PPP-Projekten befassen, berücksichtigen nicht die Einschränkungen, die sich aus der begrenzten finanziellen Leistungsfähigkeit von Risikopartnern ergeben. Dies führt dazu, dass „eine risikofreudige Partei nicht immer über ausreichende finanzielle Mittel verfügt, um die ihr auferlegten Risiken zu tragen. Darüber hinaus bieten die meisten Arbeiten zu diesem Thema in der Regel keine spezifischen Werkzeuge, um das Ziel der Kostenminimierung in der Praxis zu erreichen. Es werden weder Unterstützung für Entscheidungen über die Risikoverteilung noch spezielle Kriterien angeboten, die in einer solchen Verteilung verwendet werden könnten [3].

Bei der Erstellung eines Risikomanagementkonzepts für PPP-Projekte ist es nicht grundlegend, nach welchem Modell ein Managementsystem aufgebaut wird, das theoretisch eine permanente Überwachung der Situation, eine effektive Kontrolle der Ergebnisse, eine Anpassung der Personalanreize voraussetzt. Die Hauptsache ist die Wahl der Methoden und Instrumente für das Risikomanagement, und dies ist die Grundlage für das Modell des Risikomanagements von PPPs durch den Autor.

Unentbehrliche Merkmale einer Marktwirtschaft sind die Ungewissheit und die Veränderlichkeit des wirtschaftlichen Umfelds, die zu Verwirrung und Unsicherheit bei der Erzielung des Endergebnisses führen, was zu einer Erhöhung des Risikos oder, mit anderen Worten, der Gefahr des Scheiterns und unvorhergesehener Verluste führt.

Die Wahrscheinlichkeit eines riskanten Ereignisses in diesem Fall sollte als ein integraler Bestandteil der unternehmerischen Tätigkeit betrachtet werden.

Eine Form des Unternehmertums, die sich durch ein hohes Maß an Risiko auszeichnet, ist die öffentlich-private Partnerschaft.

Jedes Projekt einer öffentlich-privaten Partnerschaft birgt viele Risiken.

Das größte Risiko für Unternehmen im PPP-System ist der Mangel an echter Verantwortung der Regierungsbehörden für die Durchführung des Projekts.

In der Vorbereitungsphase eines PPP-Projekts (Erstellung einer Machbarkeitsstudie, Geschäftsplan, Projektdokumentation und ähnliches) sind die Risiken zwischen dem Staat und den Geschäftspartnern relativ genau definiert.

Um die notwendigen Werkzeuge für das Management von Projektrisiken zu bestimmen, können diese in traditionelle, für alle Investitionsprojekte typische und projektspezifische Projekte im PPP-System unterteilt werden [4].

Die traditionellen Risiken umfassen:

1) *Design- und Konstruktionsrisiken*, die in der Planungsphase entstehen – Bau der Anlage und sind mit der Wahl der Technologie und dem Fortschritt der Bauarbeiten verbunden:

- risiken, die mit der Konstruktion verbunden sind (zum Beispiel die Dauer der Genehmigung der Projektdokumentation, das niedrige Niveau der Reife des Projekts);
- technologische Risiken (Verwendung von unvollständigen Technologien); natürliche und vom Menschen verursachte Risiken (z. B. schlechte Einschätzung der lokalen Bedingungen);
- risiken einer Versorgungsunterbrechung (z.B. Nichtausführung der Lieferzeiten von Rohstoffen, Materialien, Komponenten, usw.);
- gefahr einer Erhöhung der geschätzten Kosten des Projekts (zum Beispiel das Auftreten unerwarteter Projektkosten);

- risiken, die aus der Unzufriedenheit der Bevölkerung entstehen, internationale und gesellschaftliche Organisation (beispielsweise eine negative Auswirkung auf die Umwelt, unzureichendes Niveau der technischen Sicherheit des Projekts, das Scheitern des Projekts auf den ideologischen, kulturellen, religiösen, moralischen, historischen, architektonischen, nationalen und anderen Gründen; Nichteinhaltung der Arbeitsbedingungen und Nichterfüllung der Anforderungen der Gewerkschaftsorgane, Verletzung der Menschenrechte, ethnischer Minderheiten oder anderer Gruppen der Bevölkerung).

2. *Finanzielle Risiken*, die während der Bauphase der Anlage entstehen, stehen im Zusammenhang mit der Finanzierung. Die Risiken dieser Gruppe führen zu der Auffindung zusätzlicher Finanzmitteln.

3. *Managementrisiken*, die sich aus dem Betrieb der Anlage ergeben, während das Risiko die Höhe der Einnahmen und Betriebskosten beeinflusst. Die Risiken dieser Gruppe sind signifikant, weil sie lange andauern und nicht vorhersehbar sind:

- kommerzielles Risiko (ein Fehler bei der Bewertung der effektiven Nachfrage); Risiko unangemessener Tarife (bei unregulierten Tarifen);
- das Risiko steigender Betriebskosten (aufgrund von Fehlern bei der Verwaltung, Untererfassung von Ausgabenposten, steigenden Preisen für Rohmaterialien und Ausrüstung usw.);
- umstände höherer Gewalt (Naturkatastrophen usw.).

Die Kategorie der spezifischen Risiken sollte umfassen:

1) *administrative und politische Risiken*, d.h. Risiken, die mit der Arbeit staatlicher (kommunaler) Machtstrukturen verbunden sind und in allen Phasen der Projektdurchführung auftreten:

- korruptionsrisiko; bürokratisches Risiko;

- gesetzgebendes Risiko (Änderung des Regulierungsrahmens im Prozess der Projektdurchführung);
- risiko einer Erhöhung der Steuerlast (z. B. steigende Steuerverbindlichkeiten aufgrund von Änderungen der Steuergesetzgebung);
- risiko einer Änderung der Prioritäten in der sozioökonomischen Entwicklung des Landes (oder der Region);
- risiko der Verstaatlichung und Beschlagnahme von PPP-Objekten; Risiko der vorzeitigen Aufhebung (Beendigung) des Vertrags; das Risiko der Ersetzung eines Partners im Zusammenhang mit der Verwaltungsreform.

2. *Risiken der öffentlichen Partnerschaft*, d. H. Risiken im Zusammenhang mit der Umsetzung des PPP-Projekts;

- risiken der Rechtssicherheit (z. B. langfristige Einigung über Projektdokumente, Verzögerungen bei der Erteilung von Genehmigungen und Bereitstellung von Entwicklungsstandorten);
- risiko mangelnder Koordination der Aktionen und unterschiedlicher Interessen verschiedener staatlicher Behörden;
- gefahr der Nichterfüllung der Vertragsbedingungen seitens des Staates (z. B. Verringerung (oder Beendigung) der Haushaltsfinanzierung); das Risiko der Doppelherrschaft zwischen den Machtniveaus; Risiko der Schwierigkeit, aus dem Projekt auszutreten und die investierten Mittel zurückzugeben; das Risiko einer übermäßigen Kontrolle (z. B. staatliche Eingriffe in die Durchführung der Finanzierung und den Betrieb des Projekts);
- risiko von Tarif- und Antimonopolvorschriften.

Es gibt auch verschiedene Risikomanagementinstrumente für Partner.

Das effektivste Risikomanagement, das es ermöglicht, die finanzielle Nachhaltigkeit des Projekts

zu gewährleisten und die notwendige Finanzierung zu akzeptablen Konditionen zu beschaffen, ist nur durch die optimale Verteilung potentieller Risiken zwischen beiden Partnern möglich. Dies ist eine der wichtigsten Voraussetzungen für die Beteiligung eines privaten Partners an der Durchführung des Projekts, weil es zur Erfüllung beider Bedingungen für die Beteiligung eines privaten Unternehmens an einem PPP-Projekt beiträgt.

Zu den Methoden des Managements gesellt sich die Methode der Prävention.

Die internen Instrumente der Präventionsmethode umfassen die Überwachung der politischen, wirtschaftlichen und sozialen Situation in der Industrie und der Region, die Analyse der Diversifizierung der Produktion, die in PPP produziert oder bereits produziert werden soll, und die Korruption der regionalen und lokalen Behörden.

Darüber hinaus umfassen die Methoden zur Risikominimierung von PPP-Projekten:

- schaffung von Reservefonds zur Deckung unvorhergesehener Kosten;
- pfandsicherheit für die Anlage von Finanzen;
- versicherung und Übertragung bestimmter Risiken an die Versicherungsgesellschaft;
- anwendung des Garantiesystems;
- erlangung zusätzlicher Informationen zu den Bedingungen der Projektdurchführung.

Es ist logisch, dass bei der Risikoverteilung jede Seite bestrebt ist, ihre Risiken zu minimieren und sie an die Gegenpartei zu übertragen [5].

Der Risikotransfer ist somit ein Instrument des Risikomanagements.

Der Grundsatz der Risikoteilung in solchen Projekten sollte das Prinzip des gegenseitigen Nutzens sein. Das heißt, bei der Verteilung möglicher Verluste ist zu überlegen, welche der Parteien das Risiko am besten beherrschen kann – es ist diese Seite, die dieses Risiko eingehen muss.

Aufteilung der Risiken muss in Stufen durchgeführt werden: zunächst müssen die Risiken identifiziert sein und ihre Auswirkungen auf den Fortschritt



des Projekts bewertet sein, dann müssen Ansätze definiert sein, um die Risiken der gemeinsamen Anstrengungen der Partner zu minimieren, und dann werden die verbleibenden Risiken zwischen dem Staat und Geschäftsstrukturen auf der Grundlage der Verwendung von irgendeiner spezifischen Form von PPP aufgeteilt.

Diese Risikoverteilung basiert auf folgenden Grundsätzen:

- Korrelation der Risiken mit der Verantwortung jeder Partei im Projekt;

- der Staat ist für Systemrisiken verantwortlich, und Markt- und Projektrisiken beziehen sich hauptsächlich auf Privatunternehmen;
- Korrelation der Risiken mit den Beträgen und Arten der Finanzinvestitionen im Projekt.

Somit bieten öffentlich-private Partnerschaften dem öffentlichen und privaten Sektor eine einzigartige Gelegenheit, Risiken zu teilen, während sie ein gemeinsames Projekt durchführen, das gegenseitige zusätzliche Unterstützung bietet, um die Vorteile und den Nutzen des Projekts für beide Parteien sicherzustellen.

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## **KRITERIEN FÜR DIE BEWERTUNG DER EFFIZIENZ MINERALISCHER ROHSTOFFRESSOURCEN IM RAHMEN INNOVATIVER UMGESTALTUNGEN**

**Abstrakt:** Die Relevanz des vorgeschlagenen Artikels ist durch Probleme der Bildung einer innovativen Wirtschaft, Steigerung der Effizienz seiner Sektoren auf der Grundlage der zunehmenden Wettbewerbsfähigkeit verursacht. Krisenerscheinungen in der Weltwirtschaft haben erneut die höchste Rentabilität des Innovationskomponente des wirtschaftlichen Umfeldes gezeigt, die ein einzelnes Segment der Wirtschaft ist, das eigene Infrastruktur, Entwicklungseinrichtungen, komplexe systeminterne Beziehungen besitzt. Der Schwerpunkt liegt auf innovativer Entwicklung durch die Diversifizierung der Wirtschaft, die ein nachhaltiges und ausgewogenes Wachstum der Wirtschaft, die Entwicklung der nationalen Innovationssysteme, technologische Modernisierung, Verbesserung der Wettbewerbsfähigkeit sichert und als Folge, ermöglicht, die Effizienz der realen Sektoren des Landes zu erhöhen.

**Stichwörter:** Innovation, innovative Entwicklung, innovative Wirtschaft, realer Sektor, Effizienz, Diversifizierung.

Öl- und Gasressourcen gehören zu den Kohlenwasserstoffverbindungen, die als Bestand eine Reihe anderer verwandter Chemikalien haben.

Abhängig von der physikalisch-chemischen Zusammensetzung können sich die Kohlenwasserstoffe auf die Methangruppe (die einfachsten, die 90 oder mehr Prozent CH<sub>4</sub> enthalten) und auf Verbindungen, die Ethan, Propan, Butan und schwerere Fraktionen enthalten, beziehen.

Von letzterem können bei den Prozessen der tiefen Verarbeitung, wenn eine Vielzahl von technologischen Schemata verwendet wird, eine breite Palette von Produkten ausgesondert werden.

Die berechneten Daten zeigen jedoch, dass der maximale Effekt nur dann erreicht wird, wenn bestimmte Bedingungen zum Herauslösen der Volumen eines bestimmten Produkts erfüllt sind. Der Gesamtgehalt der engen Fraktionen der Öl- und

Gasressourcen, deren Gewinnung in voller Menge unter Berücksichtigung der Errungenschaften der technischen und technologischen Entwicklung zu einer Tatsache wird, stellt das Potential der Kohlenwasserstoffrohstoffe dar [1].

Solch ein umfangreiches Sortiment an End- und Zwischenprodukten, die aus Kohlenwasserstoffrohstoffen gewonnen werden können, deren hohe Qualität und hohe Nachfrage die Voraussetzungen schafft, den Umfang der Rohstoffgewinnung und -verarbeitung zu erweitern.

Jedes Öl, wie bekannt, bezieht sich auf eine komplexe Art von Rohmaterialien, aus denen eine breite Palette von Erdölprodukten erhalten werden kann. In Abhängigkeit von der Anlage, in der es aufbereitet wird, bekommt man nach dem technologischen Schema der Produktion Brennstoff, Öl oder gemischte Produkte. Dabei basiert die Ölverarbeitung

unter realen Bedingungen nicht auf dem Prinzip der Extraktion aus dem „Ausrichten – Produktion – Transport – Verarbeitung“ – Prozess des maximalen kommerziellen Gewinns, sondern von der Position der freien Kapazitätsbeanspruchung in dem einen oder dem anderen Betrieb im Land.

Die gebräuchlichsten Kriterien in der internationalen Praxis bei der Bestimmung der Effektivität von Investitionen in die Entwicklung von Lagerstätten sind die Gesamtproduktionskosten und der Nettowert [2].

Der vollständige Satz aller geologischen, geographischen und technologischen Faktoren, die die Höhe der Kosten für die Feldentwicklung beeinflussen, wirkt auf den Produktionskostenwert, die aus bestimmten abgezinnten Kapitalinvestitionen und Betriebskosten pro Einheit der Produktion, Verarbeitung und Vermarktung bestehen.

Ermäßigte Kapitalanlagen von  $K_A$  pro 1 Tonne Öl werden nach der Formel berechnet:

$$K_D = \frac{K_z}{Q(1+r)^t}, \quad (1)$$

wo  $K_D$  – abgezinste Investitionen im Jahr  $t$  ist;

$K_z$  – Kapitalinvestitionen, einschließlich Kosten für geologische und geographische Untersuchungen, Erwerb von Rechten an Felder (Bonus) und Miete, Such- und Erkundungsbohrstätigkeiten, Errichtung der Sonden, Ölfeldleitungen, Gemeinkosten sind;

$Q$  – Größe der Gewinnungsvorräte ist;

$r$  – Diskontsatz ist.

Um den Wert von Kohlenwasserstoffen zu analysieren, die unter Verwendung verschiedener technologischer Verfahren in Bestandteile zerlegt werden, schlagen wir eine Reihe von Entwurfskriterien vor, die jeweils einen spezifischen technologischen Zyklus charakterisieren.

Der gesamte zukünftige Bargeldstrom, abgezinnt auf die angemessene Kapitalrendite, ist der aktuelle Wert des Projekts.

Dies ist das Prinzip des diskontierten Bargeldstroms (DBGS).

Als Diskontierungsfaktor wird die Rendite von Projektinvestitionen oder die Kapitalkosten, die eine Funktion des Projektrisikos im Vergleich zu anderen möglichen Investitionen ist, verwendet.

Unter den verschiedenen Methoden von DBGS, die zur Bewertung von Projekten verwendet wurden, wurde die Analyse des aktuellen Nettovermögens (ANV), das ist die Differenz zwischen dem positiven und negativen Bargeldstrom, diskontiert durch die Kapitalkostenrate des Projekts, als die beste anerkannt.

Der Algorithmus zum Bestimmen von ANV ist der folgende:

$$ANV = C_0 + [C_1 \div (1+r)] \quad (2)$$

wo  $C_0$  – Initialkosten des Projekts sind;

$C_1$  – zukünftiger Wert der Investitionen ist;

$r$  – Diskontfaktor ist.

Die letzte Stufe des gesamten Verfahrens zur Bestimmung der Wirksamkeit und Wirkung, die durch die Verwendung eines spezifischen Schemas für die Verarbeitung von Öl – und Gasressourcen erzielt wird, ist die Berechnung von integralen Kriterien, die die Gesamtkosten und die Leistung der bewerteten Objekte über einen langen Zeitraum hinweg widerspiegeln.

Im Rahmen des integralen Kriteriums werden die tatsächlichen Ausgaben berücksichtigt: erforderlichen Investitionen, die für den Bau und die Inbetriebnahme der Anlage nötig sind, sowie die laufenden Betriebskosten.

Die Struktur der laufenden Betriebskosten enthält in diesem Fall keine Amortisationsabzüge für die Renovierung, weil sie indirekt bereits in der Summe der einmaligen Kosten der Bauzeit enthalten sind.

Als Ergebnis wird die allgemeine Formel für das Integralkostenkriterium:

$$Z_{ИИТ} = \sum_{t=1}^T (K_t + C_t - A_t) B_t, \quad (3)$$

wo  $K_t$  – Kapitalinvestitionen in den Bau einer Rohstoffverarbeitungsanlage sind;

$C_t$  – jährliche Betriebskosten sind;

$A_t$  – Amortisationsabzüge sind;

$B_t$  – Diskontfaktor für einmalige Aufwendungen ist.

Das Kriterium der Integralkosten wird von dem Integraleffektskriterium begleitet, das zur quantitativen Ausprägung derjenigen Ergebnisse beiträgt, die bei der Verarbeitung von Öl- und Gasrohstoffen erzielt werden.

In der Praxis nimmt es die folgende Form an:

$$\partial_{IHT} = \sum_{t=1}^{\tau} [q_t P_t - (K_t + C_t - A_t)] B_t, \quad (4)$$

wo  $q_t P_t$  – Ergebnisse, die während des festgelegten Zeitraums in Weltmarktpreisen erzielt wurden, sind.

Die Bestimmung des Umfangs der integrierten Kosten und des integrierten Effekts, der für die Rechtfertigung der Wahl der Richtungen für die Nutzung der Öl – und Gasressourcen von grundlegender Bedeutung ist, erleichtert die vergleichende Analyse der bei der Durchführung der verschiedenen Projekte erzielten Ergebnisse und die Auswahl derjenigen, bei denen die technologische Komponente einen hohen wirtschaftlichen Effekt hat.

Zwischen dem Preis für den Verkauf einer Tonne Öl, das an Endverbraucher in Form von Endölprodukten verkauft wird, und den tatsächlichen Produktionskosten dieser Produkte besteht ein Unterschied, den sie als Öl-Superprofit definieren.

Für jede Ölsorte gibt es einen Unterschied zwischen den technischen Kosten ihrer Gewinnung und Umwandlung in endgültige Ölprodukte und dem Verkaufspreis [3].

Dieser Unterschied bildet einen Öl-Superprofit, der von Konsum – und Produktionsländern in Form von Steuern und Ölgesellschaften – in Form von Superprofits – angeeignet wird.

Die Existenz von Öl – Superprofits wird durch die Tatsache erklärt, dass Öl kein homogenes Produkt ist, das unter den gleichen Bedingungen hergestellt wird.

In Bezug auf die Hauptverbrauchszone ist jedes Gebiet durch seine Differentialrenten gekennzeichnet, die beispielsweise durch einen niedrigen Schwefelgehalt, die Nähe zum Absatzmarkt (Rente für das Feld) oder günstige Produktionsbedingungen (Bergmiete für Qualität) entstehen.

Folglich werden Öl-Superprofite als die Summe von Mieten und zusätzlichen Gewinnen auf allen Ebenen des Öl- und Gaskomplexes gebildet – in jedem der Teilsektoren, die in seiner Struktur enthalten sind.

Die Masse dieses Supergewinns hängt zum großen Teil vom Grad der Austauschbarkeit ab, der durch Erdölprodukte im Vergleich zu Konkurrenzkraftstoffen gekennzeichnet ist, und von der Monopolmacht, die die Beteiligten in jeder Stufe der Ölkette besitzen.

Die obige Aussage bezieht sich auf die Kategorie spezifischer Kriterien des Öl- und Gaskomplexes.

Die qualitativen Unterschiede in den Kohlenwasserstoffreserven, die aus verschiedenen Bereichen extrahiert werden, bestimmen selbst das Niveau ihrer Nachfrage, die zu einem Zeitpunkt auf dem Weltmarkt verfügbar ist. Der Anstieg der Anzahl der Transaktionen für den Rohölkauf hängt vor allem von den Qualitätsparametern des Rohöls ab, weil hohe Qualität in der Regel relativ niedrigen Produktionskosten entspricht.

Die Größe des Indikators vom industriellen Ölwert hängt weitgehend von mehreren Faktoren ab, die wichtigsten davon sind: natürliche, physikalisch-chemische Eigenschaften der Rohstoffe, die Verarbeitung der ausgewählten Richtung der Verarbeitung und die Tiefe.

Die Qualität des Öls wird vor allem durch den möglichen Gehalt an leichten Erdölprodukten bestimmt.

Dies ist aufgrund der Tatsache, dass in dem schnell wachsenden Verbrauch in fast allen Ländern die Priorität bei der Anschaffung von Ölressourcen genau den Sorten gegeben wird, die hoch genug (70%) den Anteil der Kraftstofffraktionen enthalten.

Der Wert des industriellen Wertes von 1 Tonne Öl kann stark von den Verarbeitungsrichtungen abhängen.

Aus Kohlenwasserstoff-Rohstoffen, die in Heizöl-Richtung verarbeitet werden, bekommt man mehr wettvolle Endprodukte, in diesem

Zusammenhang wird der Gewinn aus jeder Tonne verarbeiteten Öls trotz des Anstiegs der operativen und einmaligen Kosten höher sein [4].

Ein ähnliches Ergebnis wird im Falle einer Erhöhung der Verarbeitungstiefe erreicht, die zusätzlich zu den Brennstoff- und Ölprodukten Zwischenfraktionen extrahiert, die die Grundlage für ihre Beteiligung an nachfolgenden petrochemischen Prozessen bilden und eine breite Palette von völlig neuen Produkten erhalten.

Der industrielle Wert des Öls ist der Gesamtwert jener Erdölprodukte, deren Produktion von den ge-

genwärtigen oder künftigen Bedürfnissen der Wirtschaft, der Struktur des Inlandsverbrauchs und der Exporte bestimmt wird.

Mit anderen Worten, die Arten von Erdölprodukten und ihre spezifischen Gewichte in der Produktion, die den industriellen Wert von Öl ausmachen, werden hauptsächlich durch wirtschaftliche Bedingungen und in geringerem Maße durch die Eigenschaften von Öl und technologischen Fähigkeiten bestimmt.

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## DEVELOPING THE OIL AND GAS HUMAN RESOURCES AT PVN BASED ON THE RESOURCE-BASED VIEW (RBV)

**Abstract:** Vietnam Oil and Gas Group (PVN) is a multifunctional economic group which has the functions of both producing and trading oil and gas products with many entities in different fields. Not only does PVN operate in the territory of Vietnam, but it is also an economic group which has many activities of investment and development abroad as well as a direct participant in the international economic integration of Vietnam. In the context of globalization and international economic integration, the improvements of PVN's operational capacity and competitiveness have become inevitable and compulsory for the development of the Group, the development of high quality human resources of which is identified as a breakthrough in the development strategies of PVN.

**Keywords:** Vietnam, Oil and gas, RBV enterprise resource, Group.

### 1. Oil and gas industry and oil and gas human resources characteristics

#### 1.1. Oil and gas industry characteristics

Vietnam is a country with oil and gas resources and the oil and gas industry which have made important contributions to the national economy. Oil and gas activities are divided into three main areas of activities: (1) Searching-exploration-exploitation activities (upstream) are started from the beginning of geophysical survey activities, seism document processing, exploratory drilling, etc. to the time when the oil or gas is delivered to cellars (2). Transporting and storing oil and gas (midstream) is the connection between mining and processing and consumption (3). The activities of oil and gas processing, product distribution and sales, etc. (downstream) include oil refining, polymerization and oil and gas processing which start from the receipt of oil (or gas) from the exploitation site to the process of filtration, processing, polymerization and distribution of such oil and gas products. There are five very distinct characteristics of the oil and gas industry:

*Firstly, it is the essential industry:* Oil and gas has been an important source of energy in the past, pres-

ent and future of the world. The demand for oil and gas products is increasing, not only in the short term, but also in the long one due to the explosion of the population and the constant growth of the industrial sectors, especially the boom of the transport sector as the demand for travelling is increasing. In addition, this is also an energy source that cannot be replaced immediately by other sources of energy. According to the Global Energy Security Analysis Institute, the global demand for oil will increase by about 60% in 2020 compared to the current demand. According to OPEC, demand for oil and gas fuels is growing rapidly in the developing countries, and by 2025, the supply will not meet the demand.

*Secondly, it is the industry which is highly pervasive:* the development of the oil and gas industry is highly pervasive and affects the market and the development of other industries. Oil and gas industry is a multi-sectoral and inter-sectoral economic and technical sector, which is the first stage in supplying raw materials, fuels and petrochemical products for other industries such as electricity and chemicals, etc. The development of oil and gas industry, besides bringing high economic efficiency, contributes to ensuring



domestic energy security and promoting socio-economic development of the localities.

*Thirdly, it is the industry which requires large capital investment:* due to the oil and gas exploitation conditions in complex deep water, offshore areas, geological and hydrological conditions, this field requires almost all applications of the most advanced technologies which have been invented around the world in many different fields. To apply the advanced technologies, it is necessary to have large amounts of capital. Therefore, every investor in the oil and gas sector must take into account the possibility of using large amounts of capital and apply the most available advanced technology.

*Fourthly, it is the highly-performing, but risk-taking industry:* it is a potentially super-profitable investment sector. When oil and gas discoveries are commercially viable and exploited, they will bring great profit. However, oil and gas is a precarious industry. Although the geological physics industry has improved, there are high risks. Currently, only 30% of the exploratory wells are commercially effective. The production and business efficiency of different types of oil and gas fields vary greatly depending on the size of the mines, the mining conditions, the quality of the oil and the quality of the natural gas. The risks depend on not only natural (geological) conditions but also economic and political conditions.

*Finally, it is the industry which is international:* due to the use of the advanced technology, modern equipment and technology, international cooperation and foreign investment are required. The cooperation is shown in different ways and in all activities. International cooperation aims to share the risks and create sufficient amounts of capital for the operations.

### **1.2. Characteristics of the oil and gas human resources in Vietnam**

The specific characteristics of the industry result in the specific characteristics of the human resources for the industry compared to those of other economics sectors, as follows:

*Firstly, on the nature of work:* Oil and gas products in our country are mainly found in the continental shelves 50 km or more off the coast. Therefore, oil and gas exploration and exploitation activities in Vietnam are mainly carried out offshore: on offshore drilling rigs, floating structures, oil tankers and technical service vessels. As a result, the staffs have to completely isolate themselves from their families and friends and mainly contact their colleagues during their work. For the positions in the field of exploration, searching, exploitation, the working time lasts continuously from 2 to 4 weeks, each shift is 12-hour long, day or night, without any days off to ensure continuous exploitation yield.

*Secondly, technical and professional requirements:* Human resources of oil and gas Group must perform a variety of tasks with very complicated technical expertise of very high levels of economic and technical risks. Oil and gas exploration, searching and exploitation activities require many kinds of advanced and modern equipment and technologies from huge investment capital sources. Therefore, it is necessary to have highly suitable staffs who are technically competent, professionally qualified and can master the equipped techniques and technologies.

*Thirdly, physical health requirements:* Oil and gas human resources work under a lot of pressure, in terms of both time and intensity of work. The working conditions are very severe such as heat, noise, heat radiation, climate change, gas toxic, etc. The oil and gas exploration is mainly offshore, so the staffs are often under pressure of the natural conditions such as high waves, heavy winds, even storms. Drilling rigs operate continuously day and night, which causes psychological and physical stress. Therefore, the staffs are required to have good physical health and special care from the health sector.

*Fourthly, the complex oil and gas human resources training process:* The difference of the oil and gas human resources is that the trainees must master the general knowledge in mathematics, physics, chemistry, geology, climate, marine environment, etc.

The process of oil and gas human resources training not only are carried out in schools and educational institutions but also are implemented by means of new training and re-training. The training must be modern and professional, orienting to the future and of regional and world levels in the context of international integration.

### 1. Theory on the RBV enterprise resource

Wernerfelt's "Resource Based View on Enterprise Resource" (RBV), founded in 1984, is considered to be a new approach to enterprise competitiveness research. Different from Porter's competitive pressure model 5, enterprise resource theory focuses on the internal factors of an enterprise. This theory is based on the premise that the businesses in the same industry often use different business strategies which cannot be easily copied because they are formed on the resources of the businesses themselves. This theory is based on two main assumptions: resource diversity and natural resource immobility (Barney, 1991; Mata et al., 1995). According to Mata et al. (1995), (1) resource diversity (or resource heterogeneity) is that if a company owns a resource or capacity that some other companies also have, then such resource cannot provide competitive advantage; (2) Natural resource immobility: refers to a resource that is difficult for a competitor to obtain because of the high cost of developing, collecting, or using such natural resource.

Barney (1991) defines "enterprise resources include all assets, capabilities, organizational processes, company attributes, information, knowledge, etc, which are controlled by a company that allow it to perceive and implement a strategy in order to enhance its performance and effectiveness. He also explains that only some types of "corporate attributes" could constitute "enterprise resources." Many researchers have provided a list of enterprise attributes that can allow firms to perceive and implement value-creating strategies. Enterprise resources can be classified into three categories: material, human, and organizational resources. Material resources include

the technology, the technique used in a firm, a plant and the equipment, the geographic location and the right to use raw materials. Human resources include the training, the experience, the judgment, the intelligence, the relationship, the insight of leaders and human resources managers in a company. Organizational resource includes the formal structure, the planning, the control systems, the official and unofficial cooperation, as well as the informal relationships between groups within a company and between a company and its environmental factors" (Barney 1991, cited by Pham Thu Huong).

According to Barney, a source that creates competitive advantage for a firm must satisfy the following four conditions: (1) Valuable, (2) Rare, (3) Inimitable, (4) Nonsubstitutable.

- Valuable: Valuable resources must enable a firm to carry out business strategies that improve the enterprise productivity and efficiency. This helps to take advantage of opportunities and evade existing threats in the organization's business environment.

- Rare: A valuable resource that is present in other businesses is not considered a rare resource. Rare resources are the ones that are only available to the enterprise and are used by the enterprise in enterprise value-creating strategies that bring competitive advantage to the enterprise.

- Inimitable: According to Lippman & Rumelt (1982) and Barney (1991), resources are inimitable when there is one of three or all of the following factors: (a) Historical conditions: resources that have been developed by a historical event or for a long time often are costly to imitate; (b) Ambiguity of causes: Companies cannot identify the specific resources that originate the competitive advantage; (c) Social complexity: they are the resources and the culture-based capabilities of a firm or the interpersonal relationships.

- Nonsubstitutable: by strategically equivalent alternate resources. If two resources can be used separately to implement the similar strategy, then they have the equivalent strategy. Such resources can be

substitutable and therefore they are not sustainable sources of competitive advantage.

### **3. Analysis of the oil and gas human resources at PVN based on the RBV**

*The human resources at PVN are valued:* The human resources at PVN are trained at a higher level than the general level of the country and those of other groups. The percentage of trained staffs is from 80% to 90% of the total labor force, twice as much as the rate of the developing countries and five times as much as the general level of Vietnam (which is about 14,6% – 18,4%). This rate is always dominant when it is compared with those of other economic groups such as that of Garment Group (approximately 9%), that of Steel Group (approximately 14%) and that of Vietnam Coal-Mineral Industries Group (Vinacomin-TKV) (15–21%).

The labor productivity of the oil and gas industry is very high. The labor productivity of PVN is USD347,000/person, which is much higher than the average labor productivity of the mining industry (which is about USD65,000/person), that of the processing industry or construction industry (about USD3,000/person) and that of the academic profession, science and technology (about USD8,000/person) (according to data from the General Statistics Office). According to Vietnam Coal-Mineral Industries Group (Vinacomin-TKV), the labor productivity of Vinacomin in 2013 is about 27,000 USD/person, which is only approximately 1/13 of the labor productivity of PVN.

The value of the human resources at PVN is reflected through the qualifications of the leadership staffs. 100% of the leaders in PVN's management board have university degrees or higher and one fifth of them have post graduate qualifications.

*There is the rarity of the human resources at PVN:* The oil and gas exploration human resources are required to have technical skills, capacity, knowledge and good health. Oil and gas staffs are required to have much higher skills and physical requirements than other workers because the activities of oil and

gas industry must be continuous without any interruption. Therefore, the oil and gas staffs have to go with the process of the assembly lines, work many days with high concentration, meet the strict regulations of the rigs and drilling vessels and strictly comply with all requirements as well as rules on labor safety – hygiene and environmental protection. Most of the direct working staffs have college or higher qualifications, have seafarer safety certificates and have good health which is inspected every 6 months.

PVN's human resources include all staffs from many different countries. The Group has been operating not only domestically but also internationally based on international cooperation. Due to the characteristics of the industry, the oil and gas staffs have been internationally integrated in the training and working environment at the early stages. This is a unique feature of the oil and gas industry which cannot be found in other industries.

*There is difficulty in imitating:* Human resources of oil and gas human resources have to do a variety of tasks with very complicated technical skills of the specific majors such as oil and gas exploration and exploitation, drilling rigs and oil and gas technical services, gas pipeline systems, petrochemical refining factories, oil and gas production factories, biological fuel factories, petrochemical factories, finance and equipment investments and investments in civil or technical constructions. The staffs at the Group have been trained in many economic and technical professions, specifically, the percentage of staffs who are trained in the oil and gas majors (upstream, midstream, downstream) is more than 21%. According to Mahoney and Pandian (1992), if the human resources are based on the knowledge, it is very difficult for the competitors to imitate. Oil and gas qualified staffs with the specific characteristics must have basic training and practical experiences. However, foreign experts have to be employed to carry out some complicated tasks with high technology.

*The human resources at PVN cannot be substituted.* The current situation shows that the oil and gas



industry has remained the leading position of the world's primary energy share for a long time. Traditional oil production will decline, but has gradually been replaced by heavy oil and shale gas in North America. It is expected that in 2100 oil and gas which currently plays a major role will be replaced and give a path to renewable and clean energy sources. Therefore, the demand for oil and gas human resources in the coming time is constantly increasing every year to meet the development of the industry, particularly, the needs of the staffs of the core professions to ensure the sufficient human resources for business activities, especially, for oil and gas exploration and production. If the Group does not have sufficient human resources, the only solution is to employ foreign experts. However, the employment of foreign experts for particularly complicated tasks has increased the labor costs due to the high salaries based on the common salary rate for experts in the international labor market, which will decrease the competitiveness of the Group to other groups. Thus, the human resources are non-substitutable without affecting the competitiveness of the Group.

#### **4. Solutions for high quality oil and gas human resources development based on the RBV**

##### ***4.1. Why oil and gas human resources development should be carried out based on the RBV***

According to the enterprise resource theory, the internal enterprise environment is a decisive factor to the competitive advantage and this school emphasizes the importance of the human resources such as the innovation, the reputation, the structural creativity, the series of values, knowledge and talents and the flexibility. At present the creative capacity is the most important factor when we are building a knowledge –based economy because it determines the competitiveness of firms in the market.

Especially in the oil and gas industry, the exploitation of oil and gas has increasingly relied on complex data to thoroughly study the geology and search for energy sources which lie thousands of meters under the surface of the earth. In Vietnam, many key tra-

ditional oil fields have passed the full capacity of exploitation, the exploitation output has fallen sharply and the exploitation level of Vietnam has reached only 30% (meanwhile, the world is 40–45%). That is the reason why more investments in technology solutions for extreme exploitation are required. As oil production is declining, the discovery of large oil reserves in land and shallow waters has become fewer in quantities and volumes of deposits, then the sea area has become the great interest. In addition, there have been more and more difficulties in the searching and deployment of the good oil and gas projects in foreign countries because they require large capital in foreign currencies with high risks and fierce competition of the large oil and gas companies in the world. Moreover, in Vietnam, benefits from processing products to goods are very limited. In fact, we now still have to export crude oil and import petrol, the added value (or more precisely, the profit) has been accidentally “poured” into the foreign firms (the processing companies). With one dollar of crude oil in the developed countries, they can earn 0.5 or nearly 1 dollar of the added value from processed products (petrol, bitumen, plastic ... etc.).

While the technological innovation and globalization are opening a new era of the industry development, the large segments of the workforce reaching the retirement age, the potential number of staffs in businesses still being rare and the fierce competition of talents are the main concern for firms to find new resources. The Group has also affirmed that “human resources are the most precious asset, and intellectuality is an invisible property but determines the sustainable development of the Group”. These are the reasons for the development of high quality oil and gas human resources towards achieving the VRIN properties of Enterprise Resource Theory.

##### ***4.2. Suggestions and solutions***

*Firstly*, the human resources training and developing task must be implemented one step ahead in accordance with the synchronous, systematic guidelines and the international standards, linking



the parent company with the subsidiary companies of the Group. The human resources training and developing task must be linked to the operating plans to identify the specific quantity and quality requirements, which brings great benefits to PVN.

*Secondly*, it is necessary to bring into play the resources of the Group (the internal resources) to promote and develop the training task with the strategy of closely cooperating with domestic training institutions and logically developing the joint venture with international training institutions in order to prepare human resources for the long terms. Only by training human resources with specialized capacity, professional skills and good physical health can the Group create the non-substitutable natures of the human resources.

*Thirdly*, it is necessary to quickly study and perfect the operation model of State-owned economic Groups so as to suit the human resources level and

quality. The key economic groups should design their own legal frameworks for specific activities which cover the entire core technology chains so that these groups can accrue real capital, make multi-sectorial development and diversify large value-added products and have high self-governance. Only by such ways, can the Group orientate the human resources development for the core activities, which creates the “rarity” of the human resources.

However, in today’s competitive environment, businesses not only compete by resource differences, but also focus on their ability to coordinate and use resources effectively to achieve their strategic goals (Sanchez & Heene, 1996). This is also a limitation of the resource theory as it only emphasizes on the internal factors without taking into account the business environment factors and the competitive pressure of the business sector.

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## **THEORETISCHE GRUNDLAGEN FÜR DIE VERWALTUNG DER INVESTITIONSATTRAKTIVITÄT VON ORGANISATIONEN**

**Abstrakt:** Die Relevanz des untersuchten Problems wird durch die Fragen der Verwaltung der Investitionsattraktivität auf allen Ebenen der wirtschaftlichen Hierarchie verursacht, weil die methodische Ebene ihrer Entwicklung nicht den Anforderungen der systemischen Reflexion der objektiven Prozesse entspricht und nicht in vollem Maße ihre Natur abdeckt. Die Analyse der konzeptuellen Ansichten zu diesem Thema weist auf viele Argumente hin, die auf eine Divergenz der theoretischen Positionen hindeuten. Die Hauptbestandteile der wissenschaftlichen Neuheit sind die Richtungen, die weiterentwickelt wurden und Elemente einer wirklichen Zunahme des wissenschaftlichen Wissens enthalten. Die Hauptergebnisse des Artikels werden zur Entwicklung des Werkzeugsortiments für die Bewilligung der fortschrittlichsten Innovationen beitragen, die darauf gezielt sind, die Effizienz der Investitionsattraktivität von Organisationen zu erhöhen und ihre Marktpositionen auf den nationalen und internationalen Märkten zu erweitern

**Schlüsselwörter:** Investition, Investitionsattraktivität, Effizienz der Anwerbung von Investitionen, Innovation, innovative Entwicklung.

Investitionen und Motive, Investitionsentscheidungen zu treffen, werden von Wissenschaftlern seit langem untersucht.

Zu Beginn des 20. Jahrhunderts argumentierten der französische Ökonom A. Aftahlon und der amerikanische Ökonom John Bates Clark, dass sich das Investitionsvolumen unter dem Einfluss des Wirtschaftswachstums verändert. . Diese Behauptung wurde von einer Reihe von Ökonomen in verschiedenen Studien in Frage gestellt, eine Schlüsseluntersuchung von denen die Studie von John Keynes ist.

Er argumentierte, dass die Dynamik des Wirtschaftswachstums durch die Investitionsdynamik bestimmt wird und Veränderungen der Investitionsströme die Triebkräfte der Konjunkturzyklen sind. Gleichzeitig hängt die Investitionsdynamik von der marginalen Effizienz des Kapitals als Verhältnis der Profitrate und der Kapitalkosten ab.

Ein weiterer wichtiger Bereich der Investitionsforschung war die sogenannte q-Theorie der Investition des amerikanischen Ökonomen, Nobel Preisträger James Tobin [1], die auf der Annahme beruhte, dass Investitionen in allen Fällen getätigt würden, in denen sie den Unternehmenswert steigern würden.

Die empirischen Tests der Tobin-Theorie haben jedoch gezeigt, dass diese Theorie die Dynamik der Investitionen nicht erklärt. Das ist darauf zurückzuführen, dass die Ergebnisse der Investitionsentscheidungen nicht nur von der aktuellen Wirtschaftspolitik, sondern auch von der zukünftigen Politik abhängen.

Seit den sechziger Jahren des 20. Jahrhunderts wurde die Investitionstheorie ständig verbessert, was sich auf die praktischen Trends im Bereich der Investitionen auswirkte.

So schlug Stefan Hymer eine Theorie der Marktvollkommenheit vor [2].

Nach dieser Theorie versuchen ausländische Investoren, die Unvollkommenheit des Marktes im Empfängerland des Kapitals auf der Grundlage eines spezifischen Vorteils zu nutzen, der es erlaubt, die Unvollkommenheit des Marktes zu nutzen und die Kosten und Risiken von Investitionen im Ausland zu decken.

Hymer begann, Direktinvestitionen aus dem Portfolio zu teilen, und wies darauf hin, dass Direktinvestoren nicht nur durch den Erhalt hoher Gewinne, sondern auch durch die Kontrolle über das Unternehmen motiviert sind.

Die Theorie der Marktunvollkommenheit wurde von C. Kindlberger [3] erweitert und identifizierte vier Schlüsselmarktmängel, die in Verbindung stehen mit:

- Handelspolitik der Unternehmen (Marketing, Markenimage, Erweiterung der Produktlinie);
- Produktionsfaktoren (Kontrolle, Verfügbarkeit von Technologien, Qualifizierung des Personals, Zugang zu den Kapitalmärkten);
- die Möglichkeit, den Skaleneffekt zu verwenden;
- Regierungspolitik für Eingriffe in ausländische Märkte.

Die Theorie der Marktunvollkommenheit wiederum wurde von den britischen Ökonomen Buckley und Casson [4] wegen des übermäßigen Hervorheben der Bedeutung der Verwendung eines bestimmten Vorteils kritisiert.

In der zweiten Hälfte der siebziger Jahre haben sie ihre Internalisierungstheorie vorgeschlagen, wonach der Wettbewerbsvorteil nicht auf einem spezifischen Faktor in einem bestimmten Funktionsbereich beruht, sondern auf der Internalisierung – der Fähigkeit des Unternehmens, alle Technologien zu vereinen und zu nutzen und eine effektive Verbindung zwischen seinen direkten Investitionen und seiner internen Organisation.

M. Porter hat in seiner Studie zum Wettbewerbsvorteil von Nationen einen wichtigen Einfluss auf die Entwicklung der Investmenttheorie [5] gemacht.

Diese Studie untersuchte, wie einzelne Länder ausländische Direktinvestitionen in den Industrien mit dem hohen Leistungsgewinn anziehen konnten.

In dieser Studie identifizierte M. Porter vier Faktoren der Wettbewerbsvorteile von Nationen:

- Unternehmensstrategie, einschließlich Management, Führung, Unternehmensziele, Geschäftsorganisation usw.;
- Zustand der Produktionsfaktoren;
- Merkmale der Absatzmärkte, einschließlich des Umfangs der Nachfrage im Land und der Wachstumsrate, der Kaufkraft usw.;
- Verfügbarkeit von Unterstützung von der Seite der verwandten Branchen für den Eintritt transnationaler Unternehmen in den Markt des Empfängerlandes der Investition.

In der wissenschaftlichen Literatur ist die eklektische Theorie [6] von John Dunning von Bedeutung, die die Entstehung transnationaler Unternehmen und die Gründe für das Wachstum ausländischer Direktinvestitionen erklärt und einige der oben genannten Theorien kombiniert.

Nach dieser Theorie entstehen transnationale Unternehmen aufgrund der Umsetzung von drei Vorteilen, wenn das Unternehmen den Vorteil haben sollte:

- Eigentum – zum Beispiel ein Patent oder eine Technologie, die es ermöglichen, auf einem ausländischen Markt erfolgreich zu operieren;
- Standort, der die Fähigkeit einschließt, Produktionsanlagen in anderen Ländern effektiv zu nutzen. Dies erfordert das Vorhandensein des erforderlichen Personals, die Verwaltung der Transportkosten, die Absatzmärkte, die Senkung der Steuerlast, den Zugang zu Produktionsfaktoren usw.;
- Internalisierung, d.h. der Wunsch, Kontrolle und Verwaltung ausländischer Vermögenswerte zu besitzen und nicht auf die Nutzung einer externen Firma zu übertragen.

Um diese Fragen weiter zu analysieren, ist es ratsam, auf die Definition von Investitionen sowie die

Berücksichtigung ihrer Arten und ihrer Klassifizierung Bezug zu nehmen.

Im Lateinischen bedeutet das Wort „invest“ „investieren“. Unter Investitionen wird häufig verstanden, dass Geld für wirtschaftlichen Gewinn investiert wird.

Investition wird als Geldanlage in die Durchführung von Projekten für den Zweck ihrer späteren Erhöhung verstanden. Eingelegte Geldmittel werden als Investitionen bezeichnet. Investoren sind Menschen, die investieren, um Vorteile zu erhalten.

Gleichzeitig verstehen viele Wissenschaftler und Praktiker unter Investitionen langfristige Kapitalanlagen für Profit. Kurzfristige Investitionen, die nicht auf einer sorgfältigen Analyse beruhen, werden als Spekulation bezeichnet.

Je nach Quelle können Investitionen in externe (auswärtige, ausländische) und interne (inländische) unterteilt werden.

In jedem Land wird der Schwerpunkt bei der Entwicklung der Wirtschaft auf inländische Ressourcen als die billigste, erschwinglichste und langfristige gelegt.

Inländische Investitionen beschränken sich jedoch in der Regel auf die inländische Kapazität des Landes, Investitionen im Zusammenhang mit der Verfügbarkeit von Ersparnissen im Inland zu tätigen.

Eine weitere wichtige Einschränkung ist die Kapazität des Binnenmarktes, die durch die Wachstumsraten des BIP des Landes bestimmt wird.

Eine weitere Einschränkung der inländischen Investitionen ist das Niveau der Entwicklung der einheimischen Technologien und das Niveau der Ausbildung von Spezialisten, was nicht immer ausreicht, um komplexe Lagerstätten zu entwickeln.

Darüber hinaus ist das Vorhandensein einer industriellen und wissenschaftlich-technischen Basis, einer Hilfsinfrastruktur, die auch nicht immer den modernen Anforderungen entspricht, wesentlich.

Unter diesen Bedingungen haben ausländische Investitionen, die in der Regel frei von den oben genannten Beschränkungen sind, eine wichtige Bedeutung.

Der wichtigste Vorteil von ausländischen Investitionen vor inländischen Investitionen ist die Möglichkeit ihrer schnellen Anziehung in großen Mengen.

Ausländische Investitionen wiederum können aufgrund der Art der Beteiligung an Investitionen in direkte und indirekte Investitionen unterteilt werden.

Indirekte Anlagen sind meist Portfolioinvestments, also Anlagen ausländischer Investoren in ausländische Wertpapiere mit dem Ziel, Erträge in Form von Dividenden, Zinsen oder Kursdifferenzen zu erwirtschaften.

Das Ziel von Investoren bei Portfolioinvestitionen ist es, Gewinne zu erzielen. Bei Portfolioinvestitionen ist es nicht notwendig, neue Produktionsanlagen zu schaffen und deren Nutzung zu steuern, weil der Investor im Treuhandverwalter von Vermögenswerten auf andere Personen angewiesen ist. Portfolio-Auslandsinvestitionen stehen nicht in direktem Zusammenhang mit der Schaffung neuer Produktionsmittel oder anderer Vermögenswerte.

Eine wichtige Unterscheidung zwischen direkten Arten und Portfolio-Arten von ausländischen Investitionen sind die Grundsätze der Investition und des Managements. So hat der Direktinvestor die Rechte der direkten Kontrolle über das Unternehmen, und Investitionen werden in der realen Produktion gemacht.

Das moderne internationale theoretische Konzept und die etablierte Praxis erlauben es, das Konzept der ausländischen Direktinvestitionen etwas zu interpretieren.

Nach der Definition der Welthandelsorganisation (WTO) sind ausländische Direktinvestitionen eine Art von Investition, bei der ein gebietsansässiger Investor eines Geberlandes sein Vermögen in einem Empfängerland anlegt, vorausgesetzt, dass er diese Vermögenswerte erhält oder behält [7].

Eine ähnliche Definition gibt der Internationale Währungsfonds (IWF), wonach ausländische Direktinvestitionen „Direktinvestitionen in Unternehmen aller Wirtschaftszweige sind, aber



nicht nur im Land des Investors, dessen Zweck es ist, einen langfristigen Gewinn zu erzielen. Aufgabe des Investors ist es auch, ein substantielles Stimmrecht bei der Führung eines ausländischen Unternehmens zu erhalten „ [16].

Die UN-Kommission für Handel und Entwicklung gibt eine etwas andere Definition: „Ausländische Direktinvestitionen (ADI) ist eine grenzüberschreitende Investition, bei der ein Gebietsansässiger einer Volkswirtschaft (Direktinvestor) langfristige Anteile an einer anderen Volkswirtschaft (Direktinvestitionsunternehmen) erwirbt“ [8].

Im Allgemeinen wird ADI als eine Investition betrachtet, die gebildet wird, um langfristige Einkommen von den Unternehmen zu erzeugen, die außerhalb der Wirtschaft des Investors gelegen sind [9].

Ein gemeinsames Merkmal für fast alle Definitionen des Werts von ADI ist das Vorhandensein des Begriffs „Kontrolle“ oder „langfristiges Interesse“, der die Differenz zwischen ADI und Portfolioinvestitionen bestimmt, weil Portfolio-Investoren keine Kontrolle oder langfristige Interessen anstreben.

Die Kontrolle übernimmt einen bestimmten Anteil der Beteiligung des Investors am Unternehmen.

In der Regel gelten ausländische Direktinvestitionen als eine Investition eines ausländischen Investors in den Erwerb von mehr als 10% des Aktienkapitals der Gesellschaft. Der Anteil der Direktinvestorenbeteiligung in verschiedenen Ländern ist jedoch unterschiedlich.

Nach der Definition des IWF gelten ausländische Investitionen, wenn sie mindestens 25% des genehmigten Kapitals einer Aktiengesellschaft halten, als direkt [11].

Gleichzeitig wird die Größe des Anteils, der das Recht der Kontrolle in den Rechtsvorschriften verschiedener Länder bestimmt, auf unterschiedliche Weise bestimmt.

Nach amerikanischem Recht sollte der Anteil mindestens 10%, die Europäische Union 20–25% und in Ländern wie Kanada, Australien und Neuseeland 50% betragen [12].

Daher ist das Thema Investmentmanagement auch heute noch von großer Aktualität, trotz einer großen Anzahl von Veröffentlichungen zu diesem Thema. Vor dem Hintergrund der beobachteten Trends sind verschiedene Aspekte des Managements der Attraktivität von Investitionen insgesamt noch weitgehend unerforscht.

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## Section 10. Economic security

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### ON WASH TRADE DETECTION IN ENERGY MARKETS

**Abstract:** A wash trade in energy markets refers to entering into arrangements for the sale or purchase of a financial or physical instrument, a related spot commodity contract, or an auctioned product based on emission allowances, where there is no change in beneficial interests or market risk or where beneficial interest or market risk is transferred between parties who are acting in concert or collusion. Market abuse scenarios such as wash trade compromise the efficiency and integrity of energy markets. The research of abusive trading behavior in financial markets is well ahead of peers in energy markets. Effective solutions for monitoring abusive scenarios such as wash trade in energy markets have yet to be developed. This paper describes a practical implementation example of detecting wash trade behavior in energy markets using simple techniques. An easily reusable method is then proposed to detect the potential wash trade activities involved in an instrument by first detecting trades resulting in no overall change in market risk and then further identifying the collusive behavior between the counterparties. The proposed method is tested and evaluated on energy instruments order data sets from the Trayport trading platform. We find that the proposed approach can effectively detect all primary wash trade indicators across energy instruments.

**Keywords:** Energy markets; market abuse; wash trade.

#### 1. Introduction

Recent regulatory changes in Europe are likely to result in increased enforcement against market abuse in energy markets. Enforcement activity under the Regulation on Wholesale Energy Markets Integrity and Transparency (REMIT) [1] is expected to step up. REMIT is a European Union regulation designed to deter market abuse in energy markets, and also requires disclosure of price-sensitive information regarding energy generation, storage and transmission. In addition, the Market Abuse Regulation (MAR), a European Union directive applicable from July 2016 [2], will widen the scope of the existing regulatory framework applicable to certain energy derivatives

and related products. European Securities and Markets Authority published a report where a detailed technical advice on detection of manipulative scenarios such as wash trade were discussed [3].

Traditionally, market abuse cases have concentrated around financial instruments. However, energy markets have some features which may be important in any analysis relating to alleged market abuse:

- some segments of energy markets are driven by few main players and, other segments, dominated by a single entity;
- the supply and demand in energy markets should balance in real time, hence demand and supply can be insensitive to price in the

short term. Similarly, small changes in the supply-demand balance may result in significant changes in prices;

- some segments of the market are less liquid; and;
- trade is often conducted over-the-counter (OTC) and may be less transparent than exchange based trading;
- data availability for analysis.

While financial and energy markets share some of the same mechanisms, energy market's more granular feature (various venues, various instrument characteristics, delivery types etc.) energy markets must be given separate consideration in any analysis of alleged abuse in such markets.

A representative example of distinct characteristic of an energy market instrument could be a typical structure for long-term Gas or Power Agreements which are priced based on trusted indices rather than fixed in absolute terms. An index in this regard could be a reference to the average price of Platts' 3 month-ahead assessment of the Gaspool price, averaged over the previous month. The abusive behavior could be achieved by a utility's generation unit signing the long-term contract, and utility's trading unit biasing Platts' assessment of the Gaspool price downwards, reducing the price paid on its long-term contract.

Due to rapid regulative activity, existing Market Abuse Surveillance Systems functioning well in financial markets were not ready to cater for energy markets characteristics. Many energy companies committed to implement existing standard solutions, but had to scrap the configuration work and start in-house development [11].

During the last year we tried to convert ESMA's technical advice into tangible detection algorithms based on statistical methods. We've build an automated system and formulated a smooth process enabling the compliance officers to monitor the abusive scenarios and react accordingly. In this paper we attempted to describe how we implemented the wash trade detection monitor in an environment where

no prior implementations exist in the industry and license to operate is at stake.

The reminder of the paper is organized as follows. In Section II we review the work related to detection of wash trade activity. In section III we describe data mining techniques for energy trade logs as well as propose the actual detection algorithms. We evaluate in section IV and conclude in section V.

## 2. Related Work

There are a number of approaches for detecting abusive behavior in different markets. While pattern recognition and outlier detection are applicable when comparable examples exist, rule induction social network analysis and visualization are widely used with unlabeled data sets [4].

While the amount of papers in the area is growing rapidly, we found no related work on the detection of wash trade activities in energy markets. The closest by nature and complexity of instruments research is work on detection of collusive trading in futures markets, based on identifying threshold tolerance on correlation between the eligible unified aggregated time series [5]. The trader behavior was represented by an aggregated time series of signed volumes of submitted orders. The similarities of behaviors among multiple traders are measured by Pearson's product-moment coefficient, and the cliques with a coefficient higher than a user-specified threshold were considered as suspicious collusions. Further there's an extensive research dedicated to the abusive trading activities in financial markets. A spectral clustering-based approach was developed [6], where a trading-behavioral network is generated and any behavior that deviates from the network is reported as an irregularity. Authors assume that there is a strong correlation between trader's current behaviors and his/her previous trading network. A graph clustering algorithm for detecting a set of collusive traders has been proposed in [7]. Some authors believe it is unacceptable to ignore the order price information, which not only distinguishes traders' intention, but is a



key feature of wash trade activity [8–10]. The lack of the surveillance mechanisms for wash trades with multiple orders or traders left it possible for collusive parties to create a number of transactions that give a false appearance of large trading volumes [10]. Just like in the case of Vancouver based Gordon Eberwein who during 2013 wash traded in Ackroo shares through four different accounts in his possession and led to misleading appearance of trading activity [13]. Sometimes misleading appearance of a wash trade is enough for allegation irrespective of the intention [14, 15]. The academic research in this area has mainly focused on detecting the overall trading collusions according Social Network analysis or outlier detection. While these approaches are good for regulators, and overall exchange surveillance, they may require too much resources to develop for compliance purposes. Thus the industry adopted relatively simple techniques of wash trade scenarios, which can be bypassed by slightly more sophisticated manipulation pattern. We found no simple suggestions in the analysis of wash trade strategic behavior and the design of a detection approach identifying any tactics of attempts of wash trade for industry practice. Thus we propose a universal wash trade monitor that would allow easy implementation by industry practitioners from the self-surveillance perspective. Adopting these techniques would help the energy trading companies to prevent market abuse and stay compliant with a strict regulation.

### 3. Proposed Method

The monitor is developed to identify behavior where a trader executes trades for no, or little, change in overall economic position or benefit – often to artificially stimulate broker commissions for illicit reasons or to create false or misleading impression of trading activity. Based on this formulation we model the following ways wash trading can occur:

- Trading which results in no overall change in market risk (e.g. the company trading

on exchange where the counterparty is not known).

- Trading with a colluding counterparty where trades are pre-arranged or coordinated resulting in no change in market risk or overall economic position;
- Trading with self.

Since latter is to be addressed more broadly by another monitor, only the first two points are explicitly captured in by this method.

A number of challenges arise when practically implementing such a monitor for wash trades in energy markets e.g.:

- the nature of energy trades makes it possible, at least in theory, to use different but related instruments to engage in wash trading;
- fragmented, illiquid markets (typical to some energy markets) in contrast to deeper, more liquid markets make it more challenging to apply a single monitor to cover all potential eventualities.

An example includes the window within which wash trades might take place may differ between liquid and illiquid markets potentially requiring an adjusted approach for each – this is likely however to substantially increase the complexity of the monitor.

#### A. Data set

We use daily order log file from Trayport. ICE, EEX and other Exchanges haven't opened feeds for market abuse regulation monitoring yet. The file contains contains all the order and trade activity of the traders who submitted their orders via Trayport's trading system. For many companies in the market Trayport is the only gateway to trade on energy markets so far.

We classify each record according to action type as follows:

We identify our company's activity by user names where all other market participants have an anonymous trader name. Each file contains approximately 2 mln. records for one day.

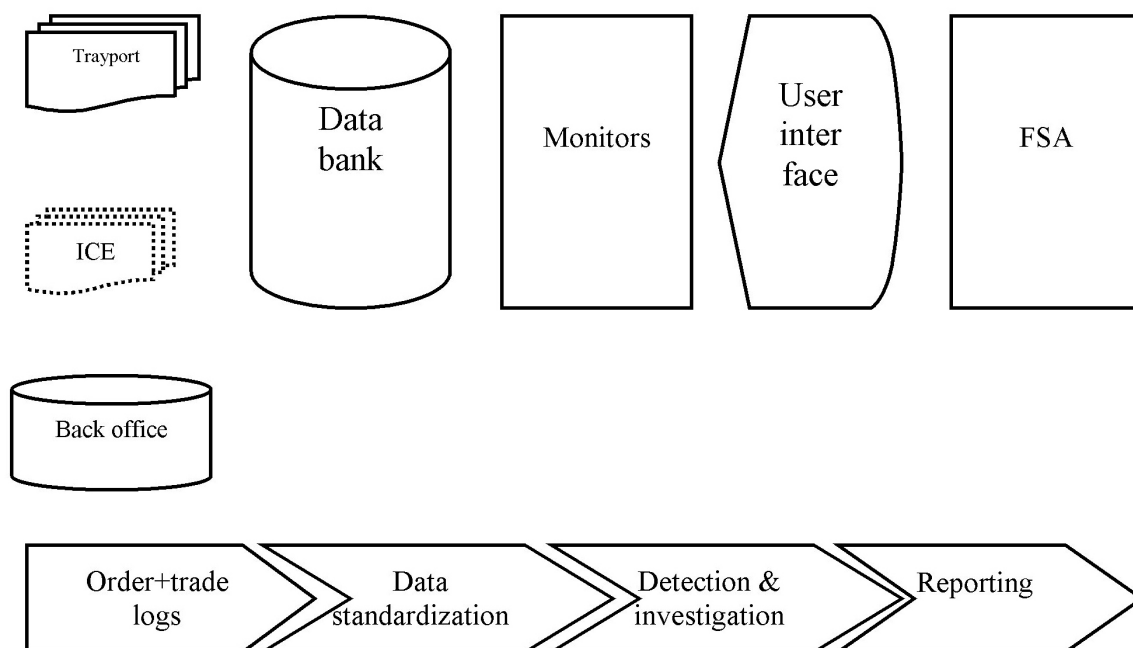


Figure 1. Data collection and monitoring process

Table 1. – Order action type description

No.	Order Action Type	
	Order Action Type	Description
1.	“Insert”	An order is added to the queue
2.	“Update”	The attribute of an order is updated
3.	“Partially dealt”	The order is partially filled
4.	“Cancelled”	The order is cancelled and removed from the queue
5.	“Dealt”	The order is dealt

We exclude all order types other than “Firm” and “Venue Implied” due to their visibility to other counterparties in the market and potential tradability. We start our analysis from 01. July 2016, where the regulation first entered the force and the data was officially made available for extraction.

*B. Data Processing*

At the first stage we collect all trade logs into a database (see Fig. 1). The database also contains the deal capture information for counterparty data. Daily

files are tested against inspection rules defined as representative of abusive behavior.

It is obvious that each order has its life span  $l$  represented as follows:

$$l = \begin{cases} (\text{Inserted}), t_0 \\ (\text{Updater or Partially dealt}), t_2 \\ \dots \\ (\text{Cancelled or Dealt}), t_n \end{cases}$$

We track each order using the corresponding ID columns. as follows:

Table 2. – Order lifecycle example

Action	Side	Order ID Group	Order ID	Price	Volume	Time stamp
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Inserted	Ask	1	1	100	20	09:00:00

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Updated	Ask	1	2	100	25	09:00:01
Dealt	Ask	1	3	100	25	09:00:10
Inserted	Bid	2	1	99	10	10:00:00
Updated	Bid	2	2	98	10	10:00:15
Cancelled	Bid	2	3	98	10	10:00:50

Table 2. depicts the mechanism of grouping orders into a logical continuation for each trader and instrument.

### C. Test

Assuming the traders ability to avoid risk the following two indicators were developed and tested.

#### Indicator 1: Wash Trade.

Opposite transactions in the same instrument executed by the same trader within calibratable time intervals differ < 1% in price (calibratable) and

Opposite transactions in the same instrument executed by the same trader within same calibratable time intervals differ < 1% in volume (calibratable).

In other words a situation like presented in the following table would generate an alert for further investigation in case of time interval calibration of 2 hours:

Table 3.– Wash Trade Indicator 1

<b>Action</b>	<b>Side</b>	<b>Trader</b>	<b>Instrument</b>	<b>Price</b>	<b>Volume</b>	<b>Time stamp</b>
Inserted	Bid	Z1	X.Q1.19	100	100	09:00:00
Updated	Bid	Z1	X.Q1.19	100	100,5	09:00:01
Dealt	Bid	Z1	X.Q1.19	100	100,5	09:00:10
Inserted	Ask	Z1	X.Q1.19	100	100	10:00:00
Updated	Ask	Z1	X.Q1.19	100,5	100	10:00:15
Dealt	Ask	Z1	X.Q1.19	100,5	100	10:00:50

Both the volume and the price difference between buy and sell transactions (Dealt) is less than 1%.

#### Indicator 2: Collusion

There is > 1 buy-sell pair (calibratable) for a given instrument with the same counterparty within calibratable time intervals (excluding exchanges) and

Net trading volume for a given instrument with the counterparty represents < 3 percent (calibratable) of the total sum of buy and sell transactions

volume with the counterparty within calibratable time intervals (excluding exchanges)

We exclude exchanges in this indicator because the exchanges hide the real counterparty information.

In table IV we represent an ideal situation where two different traders in the company accomplish more than one roundtrip within two hours interval and their resulting position ends in zero-sum:

Table 4. – Ash Trade Indicator 2

<b>Action</b>	<b>Side</b>	<b>Trader</b>	<b>Volume</b>	<b>Counterparty</b>	<b>Instrument</b>	<b>Time stamp</b>
Dealt	Bid	Z1	100	Y	X.Q1.19	09:00:10
Dealt	Ask	Z1	500	Y	X.Q1.19	09:30:50
Dealt	Bid	Z2	600	Y	X.Q1.19	09:45:10
Dealt	Ask	Z2	200	Y	X.Q1.19	10:00:50

### 4. Results And Analysis

Preliminary results of both indicators detected 4 cases (2 cases in each of October and November data set) of potential wash trade activity using indicator 2. In order to test the performance of Indicator 1, we injected manually generated order activity into the data feed, and rerun the inspection. As a result all of the injected data points were detected 100% by the algorithm.

The performance evaluation of the proposed model is based on Sensitivity (SEN) and Specificity (SPE) confusion matrix, where a false positive (FP) is defined as a wash trade case detected as normal; a true negative (TN) is defined as a wash trade case detected as wash trade; a false negative (FN) defined as non-wash trade cases, and true positive (TP) defined as wash trade cases detected correctly.  $SEN = TP / (TP + FN)$  and  $SPE = TN / (FP + TN)$ . Our findings showed that SPE and SEN values are optimal when the fuzzy matching level is at 1%, and the calibratable time intervals are set to 2 hours.

The experiments with injected orders also prove that proposed Indicator 1 approach captures all basic forms of single transaction wash trade behavior (common and easily detectable) covering both venue and broker activity. The ‘zero-net’ trade condition in Indicator 2 identifies where collusion may be evident with a single counterparty.

Results of all monitors are then presented to compliance officers who need to consider each case for investigation. They can confirm whether the trading data is factually consistent with the alleged market abuse framework. In fact, the confirmation of the existence of a specific trading strategy does not necessarily mean it was abusive. It might be the case that a strategy that appears to be abusive or manipulative is legitimate, and economically rational. Finally, if a manipulation is proven then the report is submitted to local FSA. Figures 1, 2, 3 show the examples of a system built by us.

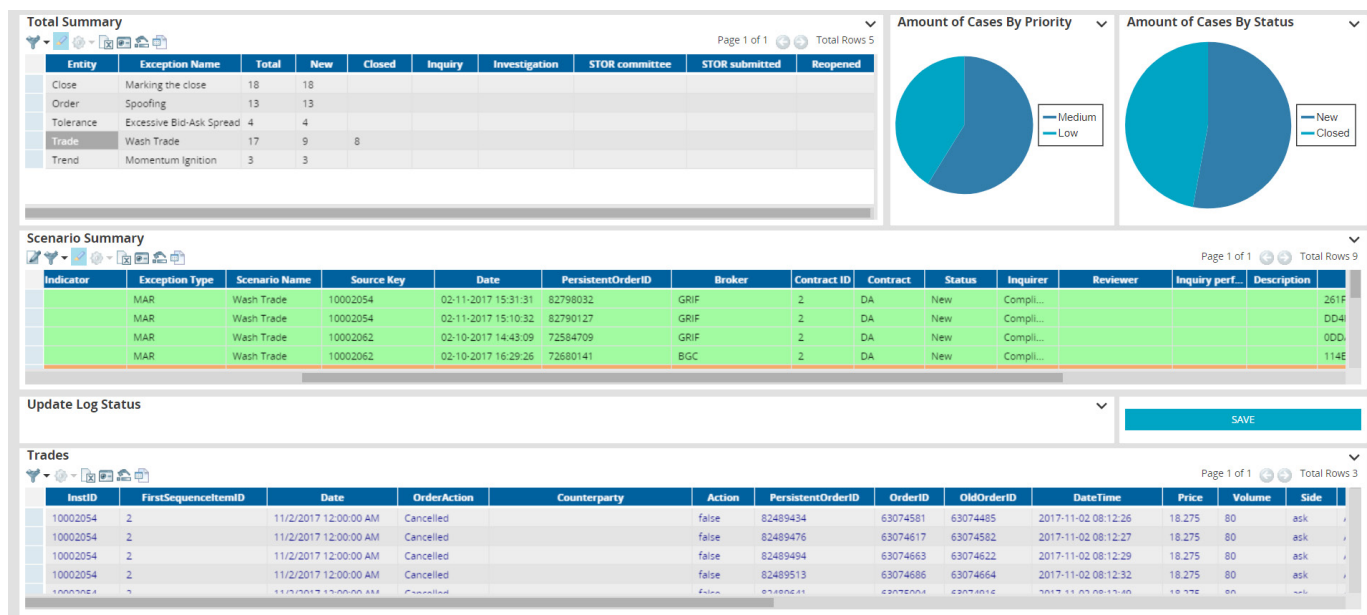


Figure 2. Dashboard for wash trade suspects

Future enhancements may include:

- to address the market liquidity point described in the section above, adapt the Monitor to introduce a liquidity based, market

specific time window appropriate for each market;

- introduce a new indicator to identify related instrument/product types which, in varying



permutations but equal volume, may indicate wash trade behavior;

- employ social network analysis techniques;

- extend the functionality of communication channel (chat, telephone, email) surveillance with language process algorithms supporting collusion detection.

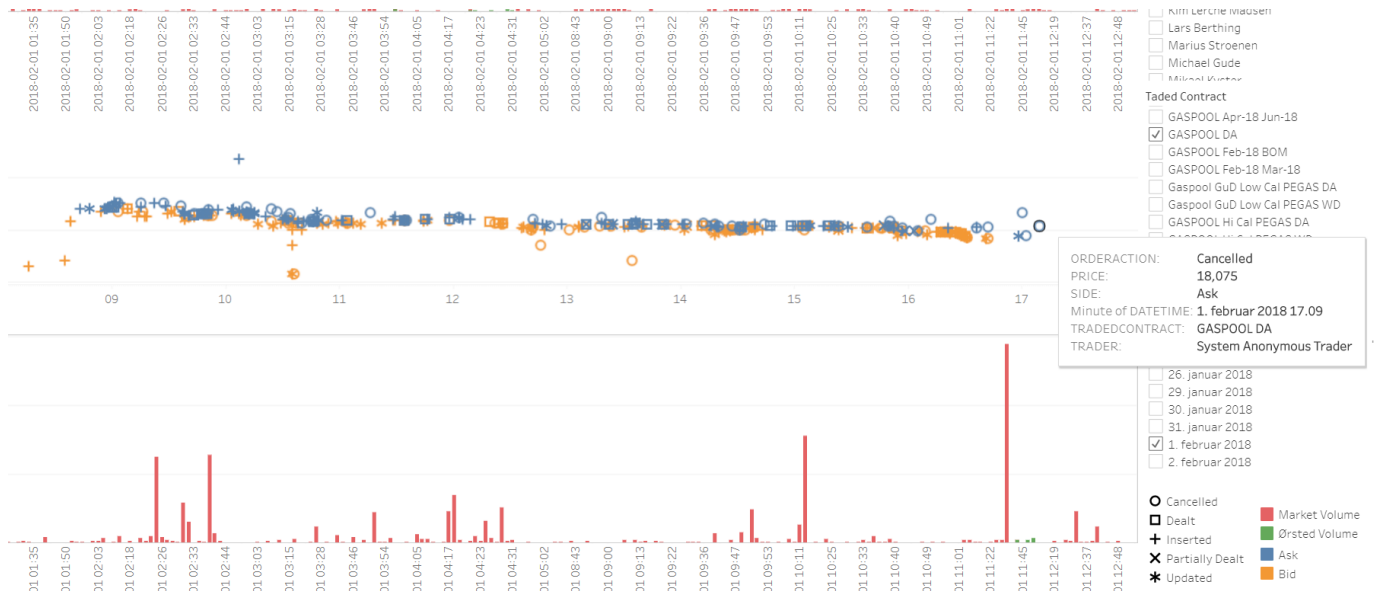


Figure 3. Graphical representation of order activity

## 5. Conclusion

We propose a simple wash trade activity detection approach from self-surveillance point of view. After thoroughly studying the various scenarios of wash trade behaviors we build a system that is applicable for energy trading companies and utilities. The wash trade monitor examines instances of trade behavior by the same trader whose round-trip trades were fuzzy matched (i.e. price and volume are approximately equal) and an instance of a trade behavior where net trading volume with the same counterparty are zero over a specific rolling time. The underlying model has room for calibration of thresholds on time intervals and fuzzy match

levels. This method differs from other proposed alternatives by simplicity of implementation taking into consideration the data availability in the energy markets and flexibility for extension. We propose fuzzy detection mechanism instead of equally priced buy/sell orders; universal collusion detection technique instead of costly network monitoring; flexible calibration across markets and instruments instead of fixed threshold. While such an approach is good for daily detection sprints, the increasing compute and storage power offered by cloud technologies, provides interesting insights for future development enabling real-time detection and reporting techniques.

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## Section 11. Economic theory

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### **ROLE AND SIGNIFICANCE OF THE INSTITUTIONAL STRUCTURES AND THE INSTITUTIONAL ENVIRONMENT IN THE DEVELOPMENT OF THE KNOWLEDGE ECONOMY**

**Abstract:** The article aims to explore the concepts of knowledge economy, which include “knowledge” and “innovations”. At the current stage of socio-economic development, the notion and the potential of the knowledge economy, as a new type of economy, is universally recognized, which is reflected in the development strategies both at the national and international levels. It can be concluded that for the effective functioning of the economy, it is necessary to ensure productive development of the institutional environment and formal institutions.

**Keywords:** Knowledge Economy, Knowledge, Innovation, Institutions, Institutional environment.

In the scientific environment, the notion of industrial economy as a system based on the industrial production and capital, reflected through the material equivalents, is no longer relevant due to the shift in economic interests in the spheres of knowledge, information technologies and services (D. Bell, P. Drucker, F. Machlup, A. Touraine, V. Inozemtsev).

Since the mid-twentieth century, scientists have begun searching for terms that could fully reflect the essence of the innovative and reformatory processes, peculiar to the leading world powers in the post-war period. Among different concepts (“Post-bourgeois society”, “post-capitalist system”, “post-entrepreneurial” and “post-market” society, as well as post-traditional, post-civilization or post-historical society (cited in Inozemtsev V.L. Postindustrial world of Daniel Bell, p. XIV [1])), the most relevant was the concept

of postindustrial society, which was first used by the sociologist D. Bell in 1959 and received the final theoretical justification in his work “The future post-industrial society” [1]. Within the framework of the given work, D. Bell minutely examined the processes of the formation of the service economy, the establishment of the knowledge bearer classes, the amendments of educational structures of the society, as well as described the trends towards the establishment of the corporations and the dominance of the technocratic class. According to D. Bell, “These two concepts – the pace of change and the change of scale – are the organizing ideas for the discussion of the central structural components of the post-industrial society, the dimensions of knowledge and technologys” [1, P. 235]. This approach predetermined the future interrelation of the economy and fundamental scientific research.

Subsequently, the investments in “knowledge” or more specifically in research, innovations and technologies can be the main prerequisites for the economic growth and productivity. Nowadays, after a lapse of time, it can be noted that the studies by the leading theorists and practitioners of economics and sociology of the second half of the XX century were built mainly around the axes- knowledge and information, first suggested by D. Bell and his contemporaries (P. Drucker, F. Machlup, K. Arrow, V. Rostow, T. Stoner, Y. Masuda, M. Castells). If we consider the works at the end of the XX and the beginning of the XXI century, we can observe the establishment of the directions in economic science, similar to knowledge, which are based on the knowledge, the productivity of scientific research and its relationship with the economy: innovative economy, neo-economy, information economy, intellectual economy. However, at the current stage of social and economic development, the idea and potential of the knowledge economy, as a new type of economy, is universally recognized, which is reflected in development strategies both at the national and international levels.

Leading world powers for many years include the concept of the future economic growth and development of the knowledge itself, or rather their production, distribution and use. First of all, this is enshrined in the regulations and documents of various structures and organizations that make up National Innovation Systems (NIS). As a result of research, on the importance and the role of the NIS at the state level, a concept was formed which is the basis of the programs of a number of leading international organizations (the Organization for Economic Cooperation and Development, the European Union, the United Nations Industrial Development Organization), focused both on the spheres of innovation, technology and on the issues of ensuring the existence and development of national innovation systems.

For the first time, the concept of “National Innovation System” was introduced by K. Freeman in 1987. According to the definition, NIS is a network of public

and private institutional structures, as a result of the activities and interactions of which, new technologies are being created, introduced, modified and disseminated.

Later, in 1992, B.-A. Lundvall emphasized the national aspect of the given system, describing NIS as the elements and relationships which interact in the production, diffusion and use of new, and economically useful knowledge. These elements are located or have been implemented within the state (on the territory of the state) [5]. Similar definitions of NIS were justified by the fact that the knowledge-based economy is not a science in its classical sense, but a “living”, constantly changing system of relations between the participants, generating the flow of knowledge and innovations – research, projects, educational institutions, which distribute and use the acquired competitive knowledge and technologies for economic growth – legal, financial, social institutions, enterprises and firms.

At the state level, the knowledge economy is represented by the work of national innovation systems and basic institutions that guarantee their functioning. The national character determines the difference between the systems of different countries, but the institutional approach and ways of interaction of institutional systems are generally unified. Russian researchers [2, 3] distinguish the following blocks (structural elements) that are the bases for NIS:

1. A creative block or block of knowledge generation (scientific institutions, universities, etc.).
2. A block of technology transfer (organizations and non-profit foundations that perform the function of an intermediary between the author of innovations and the entity of economic activity acquiring rights to it).
3. The financing block (banks, venture companies, public and state funds, etc.).
4. Production block (large, operating companies, and new enterprises involved in the organization of innovative production).
5. Block of personnel training (universities, national engineering schools, whose work has a



systematic character and is aimed at the formation of a scientific elite).

The presented blocks, as a result of their joint work, ensure the constant interaction of the private and the state sectors at all levels of institutional organization. It can be noted that they constitute a triad of a closed cycle – state ↔ science ↔ production ↔ state, which is the bases for the national policy of countries and is the key to economic welfare. When considering each block separately, institutions come to the fore, as the main mediators, ensuring the interaction and integrity of the national innovation system.

The concept of “institution” has various definitions; in modern scientific interpretation institution in its broad sense is a number of “rules” (“rules of the game”) that regulate the behavior of individuals in the society. In the context of the knowledge economy, the institution is a stable system, which, on the one hand, ensures interaction between economic agents in accordance with generally accepted norms and rules, and, on the other hand, controls and enforces compliance with these rules. Institutions fulfill a crucial role in all economic systems, contribute to the stabilization of processes by reducing uncertainty and minimizing transaction and transformation costs.

Among the basic institutions of the knowledge economy, the following can be identified: knowledge production institutions (research and development centers, research organizations, design and design bureaus), institutions of knowledge extension (higher education institutions, educational centers for additional and corporate educations), institutions for the development of knowledge (technology parks, business incubators, technology transfer centers). Institutions, performing organizational and managerial functions in the knowledge economy, include legal (organizations that protect rights, rights delegation and ownership rights) and financial institutions (banks, venture companies, insurance and guarantee funds). If we consider the above-mentioned institutions as a single whole, we should combine them

within the following concept – the institutional environment.

The institutional environment, with regards to the knowledge economy, is a combination of fundamental economic, legal, political and social rules that form the basis for the production, protection, transfer, storage and use of knowledge. The institutional environment is the organizational level at which different entities jointly or individually contribute to the development and dissemination of new technologies and innovations, this level is responsible for the formation and implementation of the goals of government, determined in accordance with the requirements of the knowledge economy. Ultimately, the main tool for stimulating innovation and forecasting strategies for the development of the knowledge economy is in the hands of the state as the most powerful institution. The more actively the government reacts and participates in the transformation processes generated by the knowledge economy, the more obvious is the economic growth in comparison with other countries.

Knowledge generation in the past was not so dynamic, today the government itself, with the help of economic and organizational and legal instruments, controls the flow of new knowledge and information that are radically different from material resources. The knowledge, within the concept of the knowledge economy, is simultaneously a “source material” (resource), a product of activity, a source of value and an instrument of competition. In this regard, the state must take into account the interests of all participants in the institutional environment and the interests of the national development strategy, for stimulating and regulating the activities of innovation processes.

The knowledge economy has proved its effectiveness within the framework of the concept of national innovation systems; nevertheless, in the world market, countries, in addition to scientific potential, have been able to ensure the productive development of the institutional environment and formal institutions. The presence of an inert institutional

system can inhibit any technological and innovative breakthroughs; therefore, the special attention at the governmental level should be given to the modernization of institutional foundations that have potential relevance to the development of the knowledge economy.

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