

MINISTRY OF EDUCATION OF THE REPUBLIC OF BELARUS  
VITEBSK STATE TECHNOLOGICAL UNIVERSITY

**EDUCATION  
AND SCIENCE IN THE  
21st CENTURY**

**ARTICLES**  
of the III International Scientific  
and Practical Conference  
November 1, 2018

Vitebsk  
2018

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In this edition the Researches of scientists on the following directions are presented: technology and production of threads, fabrics, knit and nonwoven fabrics; design and production of clothes; equipment of the clothing, textile and shoe industry; economics and management in clothing, textile and shoe industry.

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## Section 1. INDUSTRIAL TECHNOLOGIES AND EQUIPMENT

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### MODERN DIGITAL PRINTING ON LINEN GOODS

### СОВРЕМЕННАЯ ЦИФРОВАЯ ПЕЧАТЬ НА ЛЬНЯНЫХ ИЗДЕЛИЯХ

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#### ABSTRACT

LINEN, DIGITAL PRINTING, FASHION TRENDS, PRINTS, PATTERNS, GEOMETRY, PLANT MOTIFS

*The aim of the work is to design modern drawings for digital printing on linen fabrics of the Orsha Linen Mill. The enterprise has high-tech printing equipment in its arsenal. Printing is done on the Italian digital inkjet printer of «Reggiani» company. In modern market conditions, it is advisable to produce fabrics in small batches with a wide variety of patterns. The consumer demands more and more personalization and frequent change of assortment, and also ecological compatibility. Technologies for the production of raw materials and materials in the textile industry are also improving, moving towards digital printing on fabrics made from natural fibers.*

#### АННОТАЦИЯ

ЛЕН, ЦИФРОВАЯ ПЕЧАТЬ, МОДНЫЕ ТЕНДЕНЦИИ, ПРИНТЫ, УЗОРЫ, ГЕОМЕТРИЯ, РАСТИТЕЛЬНЫЕ МОТИВЫ

*Целью работы является проектирование современных рисунков для цифровой печати на льняных тканях Оршанского льнокомбината. Предприятие имеет в своем арсенале высокотехнологичное оборудование для печати. Печать производится на итальянском цифровом струйном принтере фирмы Reggiani. В современных рыночных условиях целесообразно выпускать ткани малыми партиями с большим разнообразием рисунков. Потребитель требует все большей персонализации и частой смены ассортимента, а также экологичности. Совершенствуются и технологии производства сырья и материалов в текстильной отрасли, шагая в сторону цифровой печати на тканях из натуральных волокон.*

Linen products differ not only in their refinement and beauty, but also in their hygienically important properties. They are hygroscopic and air-permeable, have high strength, withstanding multiple washing, while retaining their original size and color. They can be boiled, ironed with a hot iron, i.e. it is good to disinfect.

The main way to obtain images on fabrics is traditionally the screen printing, or, as it is also called, silk-screen printing. Currently, as a result of the development of digital printing methods, screen printing technology has developed strong competitors. The use of large-format printers (plotters) is especially advantageous when printing small-circulation works, since these devices do not require time and money to manufacture a printing plate.

The technique of digital printing allows you to accurately transfer the desired image to the surface without intermediate media, provides the ability to multi-color application, reflects all the small details of the picture, making it realistic and clear. This technique allows to apply drawings to the linen different in their saturation, size and color scheme.

Initially, digital printing was used in the production of soft advertising banners and signboards, but with the development of the printing technology itself, new market segments were mastered: textiles, clothing, home textiles, hipped and automotive awnings etc.

In modern market conditions, it is advisable to produce fabrics in small batches with a wide variety of patterns. Of course, in order to stay in the trend, it's important to know not only fashionable styles, fabrics and their color palette, but also the drawings, which have become more and more often in the focal point of the fashion world. A print can become the highlight of any outfit, if it harmoniously fits into the common features of the image and chosen clothes, it can also destroy the style when it is out of date. This implies the importance of understanding what designers designate for future fashionable seasons. The designer should know about the most important seasonal trends when designing a fabric pattern. Knowing the latest trends in the rapidly developing design industry, determining which colors, motifs and patterns will be in vogue allows to ensure the competitiveness of the produced fabrics.

In Belarus, the production of linen fabrics is presented by the Orsha Linen Mill. Today the main assortment of the finished products of the mill is made up of tablecloths, napkins, towels, sets of table linen, souvenir kits; bed linen: sheets, pillowcases, duvet covers, bed linen sets; blankets: half-linen jacquard multicolored and more. Linen tablecloths, embroidered table and tea sets, linen cloth of different density and texture - all this has already become a visiting card not only of the linen mill, but of our country as a whole.

The main task of the research work is the development of trendy competitive drawings for digital printing on linen fabric with the use of modern computer technologies produced at the Orsha Linen Mill. A collection of mono-spanning fabrics 150 cm wide for digital printing on linen was developed.

At the moment, very popular prints on the themes of botanical garden, pop art, batik, also marine themes, psychedelic drawings, imitation of watercolors, the printed pattern on the texture are in great demand.

Flower print is the constant of any fashion season. In 2018 the flower theme also actively manifested itself. Fans of flora on their own clothes can easily find the best option with a suitable scale of colors and a successful color scheme.

Such geometric forms as a circle, a square, a triangle, etc. have the simplest elementary structure. The fact that the human eye captures them without any difficulties is the reason why for so long the attention to the geometric ornament has been paid to by the most diverse peoples.

As an example, the print «Antiworlds». Elements are located evenly on the entire surface of the rapport, which creates calm in the perception of the pattern, despite the dynamic lines of the background. The simplicity of the composition is ensured by the quantitative relationships of the elements in shape and size, their contour outlines, the direction of the movements, the rhythmic organization of the components and their mutual balance, the limited and laconic character of the expressive means.

The developed design of sketches of fabrics corresponds to modern tendencies, takes into account ergonomics and technological features of production. Figures of fabrics and piece products do not have a dense filling of the dye, which can lead to a significant increase in the cost of production. Sketches are made taking into account the existing capabilities of the digital machine, namely: enhanced color reproduction and printing resolution. The collection of sketches takes into account modern tendencies in the field of textiles and consumer preferences of buyers related to the market segment of the plant.

The use of modern computer technologies in the textile industry determines the renewal in the approach to the graphic presentation in the design projects of fabrics and piece goods for a more complete realization of the resource of modern technical and technological capabilities of the new equipment of the enterprise, taking into account the analysis of current trends in the world market and consumer demand in the market segment, occupied by the plant.

Undoubtedly, the research pursues the goal of the promotion of products from the flax, Belarusian national heritage, in the textile market. The given assortment combines in itself ecological compatibility and modern information technologies.

Digital printing eliminates a number of technological operations for coloring and printing and shortens the period of preparation for the production, thereby adding to it an additional competitive advantage in rapidly changing fashion cycles. In addition, digital printing on textiles is a more ecological process, requiring less energy and water and leaving a minimal amount of waste compared to the traditional industrial printing process.

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## INVESTIGATING THE GEOMETRIC CHARACTERISTICS OF WOOL FIBERS USING AN ACOUSTIC DEVICE PAN-1

## ОПРЕДЕЛЕНИЕ ГЕОМЕТРИЧЕСКИХ ХАРАКТЕРИСТИК ШЕРСТЯНЫХ ВОЛОКОН С ИСПОЛЬЗОВАНИЕМ АКУСТИЧЕСКОГО ПРИБОРА ПАН-1

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### ABSTRACT

FIBERS, WOOL, LENGTH, DIAMETER, UNEVENNESS, ACOUSTIC DEVICE, COMB ANALYZER, MOISTURE

*In this article we consider the geometric properties of local wool, determined by the standard length method on a comb analyzer and thickness using a micrometer, and also on an acoustic PAN instrument. The results of the experiments using the standard procedure showed that the weighted average length and thickness index is higher for the wool fibers of the sheared breed of sheep. The results of the experiments on the acoustic device showed that the coarser and irregular fibers, the less the density of the fibers in the chamber, and consequently the more intense passage of the sound pulse. The result obtained on the PAN-1 device is an affirmation of the fact that fibers of the sheared breed of sheep are coarser and irregular, that is, with two methods*

### АННОТАЦИЯ

ВОЛОКНА, ШЕРСТЬ, ДЛИНА, ДИАМЕТР, НЕРОВНОТА, АКУСТИЧЕСКИЙ ПРИБОР, ГРЕБЕННОЙ АНАЛИЗАТОР, ВЛАЖНОСТЬ

*В данной статье рассмотрены геометрические свойства волокон различных видов местной шерсти, определённые стандартным методом (длина на гребенном анализаторе и толщина при помощи микрометра), а также на акустическом приборе ПАН. Результаты экспериментов по стандартной методике выявили, что показатель средне-взвешенной длины и толщины выше у шерстяных волокон помесной породы овец. Результаты экспериментов на акустическом приборе показали, что чем более грубое и неравномерное волокно, тем меньше плотность массы волокон в камере, а следовательно, более интенсивное прохождение звукового импульса, то есть при двух способах оценки шерстяных волокон, были полу-*

*for evaluating wool fibers, similar results were obtained. The influence of mass, humidity and diameter of the samples on the transmission of the sound signal is analyzed with the use of the PAN-1 device.*

*чены аналогичные результаты. Изучено влияние массы, влажности и диаметра образцов на прохождение звуковых сигналов.*

Wool is characterized by a large heterogeneity in physical and mechanical properties, which complicates its processing. The world has departed from the subjective assessment of the characteristics of raw wool and entered the era of objective measurements and specifications, and the trade in raw wool quickly goes on to the sale according to a general description, which requires accurate, rapid and cost-effective measurement of the entire raw material. Wool characteristics are important for price determination, and end use. The development and availability of new technologies and equipment allowed to objectively measure more characteristics of woolen fibers than it was in the past [1].

Comparative analysis of methods for determining the geometric characteristics of woolen fibers. The results of tests carried out to determine the geometric characteristics (fineness, length) of wool fibers of different breeds by the standard method are shown in Table 1.

Table 1 – Indicators of fineness, length of woolen fibers

№	Name of the characteristic	Samples of woolen fibers		
		Hissar	Karakul	Crossbreed
1.	Weighted average length, mm	48	53,6	66,1
2.	Modal length, mm	59,8	58,4	65
3.	Staple length, mm	64,8	65,1	81
4.	Standard deviation in length, mm	3,52	3,50	3,2
5.	Coefficient of variation in length, %	7,9	6,5	4,8
6.	Average diameter, micron	029	33	44
7.	Coefficient of variation thickness, %	37,9	51,5	40,9

The results of determining the average diameter of the wool are shown in Figure 1.

The analysis of the results showed that the coarsest of the three samples of wool fiber is Crossbreed wool with an average diameter 34 % larger than that of the Hissar breed and 25 % larger than that of the Karakul breed of sheep. Indirect characteristics of tones and roughness of wool fibers of selected breeds were also determined on the PAN-1 unified acoustic device. Acoustic device PAN-1, designed to determine the grade of raw cotton and

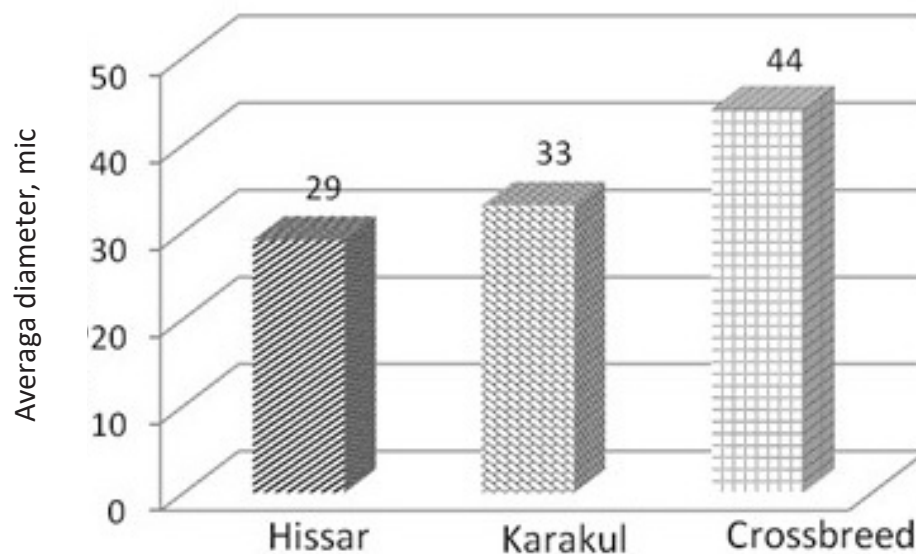


Figure 1 – Average diameter of wool fibers of different breeds

cotton fiber by the express method. The principle of the device is based on the ability to transmit sound pulses through textile fibers, depending on their structure. The method is an indirect method of estimating the fineness and roughness of the fibers. To evaluate the wool fibers on the PAN-1 device, an experimental study was carried out using an express method. The results of the determination of the signals propagation of sound pulses through wool fibers on a PAN-1 device with samples mass of 10 grams and 17 % humidity. The results of the passage of sound pulses are shown in Figure 2.

Analysis of the results shows that the largest value of the sound pulse transmission is characteristic of the coarse cross-hair coat, which has the highest fiber thickness and uniformity in length, which facilitates a uniform laying of the fibers in the measuring chamber and the passage of the highest value of the sound pulse. The smallest value of the passage of the sound signal is in the sample of Hissar wool. It is 48 % and 56 % respectively less than Karakul and Crossbreed wool, which can probably be explained by the higher density of fiber laying in the chamber of the device. This can be explained by the fact that Hissar's wool has the smallest diameter, greater uniformity in tin and the presence of short fibers, gives a strong seal and prevents the penetration of sound.

In general, it can be noted that the readings of the PAN-1 device correlate well with the results of the geometric properties of the fibers determined by the standard method and can be used to indirectly assess the fineness of the wool, provided that the gradation of the fineness of the wool is determined depending on the magnitude of the sound pulse.

To determine the influence of different moisture values and geometric characteristics of wool fiber on the passage of a sound signal on the PAN-1 device, an experiment was



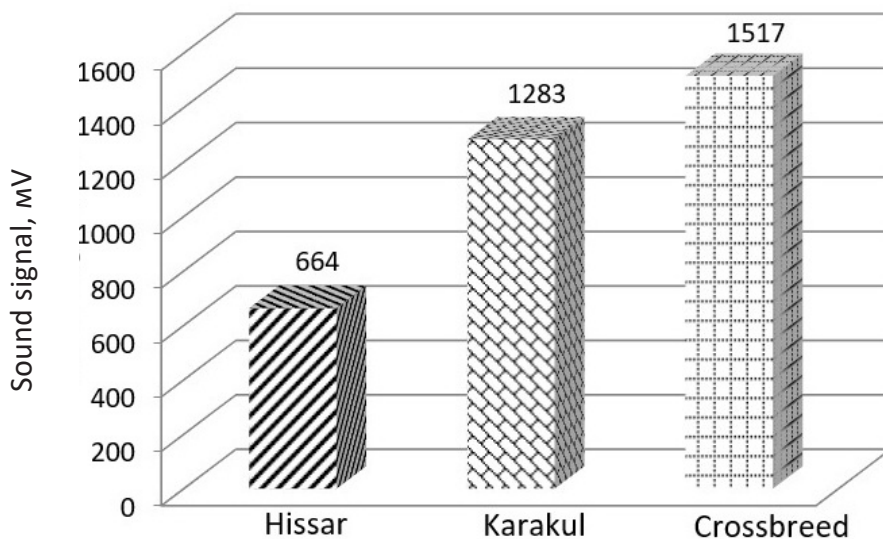


Figure 2 – Passing sound pulses through wool fibers on the PAN-1 device indication

performed that realizes all possible non-recurring combinations of the levels of the investigated factors, called a full-factor experiment.

To solve the problem of optimizing the tuning parameters of the improved drafting system, a  $3^2$  full factorial design – 9 experiments, i.e. a complete search of all possible combinations, all levels of factors, as in textile research the usual search is the most effective method of searching for an optimum.

Three factors are affected: the mass of wool fiber ( $X_1$ ) at levels: 8, 9, 10 grams, wool fiber moisture ( $X_2$ ) at levels: 7 %; 12 %; 17 %, wool fiber diameter ( $X_3$ ): 22 micron, 33 micron, 44 micron.

As a result of the calculation, we obtain a regression multivariate model. The significance of the regression coefficients was checked. For this, the Student's test

$$Y_R = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_{12}x_1x_2 + b_{13}x_1x_3 + b_{23}x_2x_3 + b_{123}x_1x_2x_3;$$

$$Y_R = 1253,2917 - 199,9583x_1 + 27,2083x_2 + 336,9583x_3 + 9,9583x_1x_2 + 88,375x_1x_3 + 9,875x_2x_3 - 8,7083x_1x_2x_3$$

was used, where calculated value  $tR$   $\{b_i\}$  was compared with the tabulated  $tT$ . If  $tR > tT$ , then the hypothesis about the significance of regression coefficients is not rejected. Thus, the attainment of maximum values of the sound pulse of wool fiber samples is possible

when the values of the factors approach the upper level of the chosen variation interval.

Based on the results of the experiment planning, the following conclusions can be drawn:

- the sound impulse of the samples increases with increasing diameter, mass and humidity in the selected ranges of variation;
- comparison of regression coefficients with the corresponding factors shows that the greatest influence in the conducted experiments is the diameter of the woolen fiber.

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UDC 620.2

## NOMENCLATURE FORMATION OF QUALITY INDICATORS FOR POLYMERIC SOLES

### ФОРМИРОВАНИЕ НОМЕНКЛАТУРЫ ПОКАЗАТЕЛЕЙ КАЧЕСТВА ДЛЯ ПОЛИМЕРНЫХ ПОДОШВ ОБУВИ

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#### ABSTRACT

*NOMENCLATURE, SHOES, COMMODITY,  
QUALITY, QUALITY INDICATORS*

The nomenclature of shoes includes a big range of quality indicators. However, only some of them can be applied for polymeric soles when we need to characterize the quality of shoe soles. To avoid less informative indicators which can bring down the quality of nomenclature it is necessary to revise nomenclature of quality indicators only for polymeric soles.

Nowadays there is no nomenclature of polymeric soles for easy use in commodity science. This is due to the fact that soles frequently considered as a part of shoe construction.

There is a wide range of nomenclatures of quality indicators for shoes in commodity science [1, 2]. But in such nomenclatures there are many quality indicators for all shoe construction. Naturally we understand that for commodity assessment of soles it is difficult to use all of this quality indicators. Low-level indicators may reduce the quality of

#### АННОТАЦИЯ

*НОМЕНКЛАТУРА, ОБУВЬ, ТОВАРОВЕДЕ-  
НИЕ, КАЧЕСТВО, ПОКАЗАТЕЛИ КАЧЕСТВА*

Номенклатура потребительских свойств обуви содержит большое количество показателей качества, которые не всегда могут быть необходимы при характеристике подошв. Для того чтобы избежать применения малоинформативных показателей, наличие которых может снизить качество номенклатуры, необходимо разработать уточненную номенклатуру показателей качества полимерных подошвенных материалов.

nomenclature in practice of estimating the quality of soles. Therefore we decide to do the easy-to-use nomenclature of polymeric soles.

Expert method is usually used for developing a nomenclature of quality indicators [3]. The first step of this work is making a three level nomenclature as viewed by the commodity science. In Table 1 there are all indicators that used in formation of commodity nomenclature of polymeric soles.

Table 1 – The quality indicators of polymeric soles

Level I	Level II	Level III
Appointment index	Resistance to external influences	Repeated flexing
		Abrasion resistance under slipping
		Abrasion resistance under slipping on a renewing surface
	Mechanical strength and elasticity	Elastic stress
		Tensile stress
		Tensile stress – strain properties
	Structure of the material	Shore A hardness
Density		
Ergonomic index	Physiological requirements	Weight
		Flexibility
Reliability index	Durability	Shelf life
Aesthetic index	Appearance	Conformity artistic-color design of the modern trend of fashion
Ecological index	Ecological compatibility in the process of production and consumption	Concentration of toxic gaseous products released during production
		The content of harmful impurities released into the environment
Economic index	Production costs	Cost price

Appointment index characterizes the degree of conformity to the purpose of the product.

Resistance to external, mechanical strength and elasticity, structure of the material influence determines the use of soles in various types of footwear, depending on its purpose.

Physiological requirements determine convenience of consumption. It means that energy efforts during walking should give the maximum beneficial effect.

Durability must meet the time requirements for production and use.

Appearance characterizes social significance and values in fashion ways.

Ecological compatibility in the process of production and consumption is an important factor today. Materials should not harm the environment, heredity and human health in the process of production, consumption and disposal, and must also meet sanitary and hygienic standards.

Production cost should be justified by the producer.

All the listed quality indicators take into account the basic requirements for polymeric soles.

The next step in formation of the nomenclature of polymeric soles will be the expert method which helps to identify the most important quality indicators.

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## BASIC ASPECTS OF KNEE-PAD DESIGN TECHNOLOGY FOR SPORTSWEAR

### ОСНОВНЫЕ АСПЕКТЫ ТЕХНОЛОГИИ ПРОЕКТИРОВАНИЯ НАКОЛЕННИКОВ ДЛЯ СПОРТИВНОЙ ОДЕЖДЫ

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#### ABSTRACT

*CONSTRUCTIVE MODELING, SPORTS KNEE PADS, SPORTSWEAR, KNEE JOINTS, DESIGNING CLOTHES FOR SPORTS*

*The article presents the results of the study and systematization of information about the knee pads according to their purpose, degree of rigidity, type of fixation and materials, studied the features of the structure of the knee joint, considered the variety of the structure of the knee joints, the range of problems is set to be solved to update the process of design and manufacture of knee pads on an industrial scale.*

The increasing interest in sports actualizes the problem of producing high-quality sportswear [1]. In Russia extreme sports gain great popularity, so one of the main quality indicators of clothing for these hobbies is to ensure a high degree of the athlete protection from possible injuries [2]. Traditional protective equipment includes knee pads, elbow pads, the helmet.

Knee pads, along with other elements of protection, are an important component of sports equipment for various kinds of sports. Information about the methods of designing knee pads is very limited and often of an advertising nature. The different purpose of using

#### АННОТАЦИЯ

*МОДЕЛИРОВАНИЕ, СПОРТИВНЫЕ НАКОЛЕННИКИ, СПОРТИВНАЯ ОДЕЖДА, КОЛЕННЫЕ СУСТАВЫ, КОНСТРУИРОВАНИЕ ОДЕЖДЫ ДЛЯ СПОРТА*

*В статье приведены результаты изучения и систематизации информации о наколенниках по назначению, степени жесткости, типу фиксации и материалам, изучены особенности строения коленного сустава, рассмотрено разнообразие строения коленных суставов, определен круг задач, которые необходимо решить для актуализации процесса проектирования и изготовления наколенников в промышленных масштабах.*

knee pads, the variety of their constructive and technological solutions, the variety of materials types used in their manufacture, as well as the newest innovative developments and technologies [3] represent a huge information field requiring careful research and systematization, on the basis of which a scientifically grounded designing method [4] of knee pads for sportswear is being developed.

In a modern sportswear, the knee pad can be either an independent piece of clothing or part of the product (for example, the knee pad can be connected with trousers by any technological method: stanching, glued, soldered, etc.). The first listed type of knee pads is the most common. Designing and manufacturing of such knee pads is carried out in a separate way, apart from the complete set of sports clothes of a certain type. In this case, the knee pad is considered as a universal element, which can be more often attributed to shortcomings, since the employment of various sports presupposes the need to protection from injuries of various kinds.

In addition to sportswear, knee pads are very popular in medicine, this aspect should also be taken into account when studying information about knee pads. The question of the connection between the shape and design of the knee pad and the features of the knee joint structure is of great interest. The functional purposes of knee pads are varied. Based on the studied material [3], the following directions of using knee pads for medicinal purposes are highlighted: for the prevention of various diseases, for orthopedic and corrective purposes, as protection against large knee loads. In clothes for sports training, the key function of knee pads is to protect knee joints from external influences.

Every year, a large number of knee pads of various compression level [5], materials [6], degree of construction rigidity [7], and method of fixation appear on the market of sporting goods. To implement the knee design process, all the information describing the feature of this element of protection is systematized. For athletic knee pads, the following are the most typical applications, depending on the variety:

- the rigidity degree. The most relevant for such sports as running, tennis, football are soft knee pads, since they fix the position of the knee sufficiently, reducing the risk of sprain, but are not protective from bruises and falls, since these sports do not involve a large number of injuries of this kind. Semi-rigid knee pads are used in those sports where falls are frequent enough, and protection of ligaments from stretching is still needed (hockey, snowboarding, etc.) Rigid knee pads are used to rigidly fix the knee joint in many ways restricting movement, so these knee pads are used for therapeutic and preventive purposes.

- by fixation degree. The knee pads of light fixation are made of elastic materials and correspond to soft knee pads. Reinforced knee braces are used to stabilize the knee joint, supporting it on the sides. Tutors and reinforced frame structures rigidly fix the position of the knee joint, excluding its movement (for rehabilitation after complex injuries and

operations on the knees).

An important question is which materials are most suitable for the manufacture of sports knee pads. Currently, knee pads are made of cotton, neoprene, nylon, spandex, lycra. Along with woven materials for knee pads, reinforcing parts made of plastic and light metal alloys, silicone inserts, foam, various innovative materials of various properties and purposes are used.

Another important aspect in the design of knee pads is information about the knee joint itself, it is necessary to know how the knee itself is constructed and what it should be protected from. The knee joint is the largest and most complex joint. It does not only withstands body weight, but also allows a variety of movements [8].

The knee consists of bones, muscles, ligaments, meniscuses (external and internal), nerve endings and blood vessels.

The most interesting information basis, from the point of the design of knee pads (part of the product), is the patella (the bone that forms part of the knee joint). The movement of the patella in the article «Anatomy of the knee joint of a person and caring about it» [8] is described as follows: «The trouser is attached to the main bones by ligaments, located in front of the kneecap. Its movements are ensured by sliding along special grooves in the tibial femoral condyle - a pallofemoral fossa. All three surfaces are covered with a thick layer of cartilaginous tissue, its thickness reaches 5-6 mm, which provides amortization and reduction of thistle during movement».

With the help of the articulated structure, the knee joint enables to perform such movements as flexion and extension of the tibia, pronation (rotation inward) and supination (movement outside), turning the tibia, and rotational and circular movements.

With the appearance of deformity of the knee joint, the shape of legs, the position of the internal parts of the knee joint, and even the character of the motor activity changes. Most often deformations of this type take place in childhood, and then with age, the knees assume a permanent incorrect position[9].

With valgus pathology, the knee joints are curved to the side, the so-called X-shaped form of the lower limbs appears. In the knee joint, the position of all bones is shifted, the pathological development of the muscles of the knee joint occurs, while the patella is displaced outward when bending.

With valgus pathology, the knee joints deflect from the normal axis to the outside, which causes the O-shaped development of the lower limbs. When squatting people with this knee structure have patella often turned inside.

Because of such differences in the structure of the knee joint of different people in dynamics, it is often difficult to choose a semi-rigid protective knee that would not constrain movement of the knee cap when squatting and would not slip off it.

When designing knee pads on an industrial scale, it is important to take into account



differences in the structure of the knee joint. To do this you need:

1. To study the statistics of the occurrence of different structure of the knee joint among the population. At the same time, the age and sex characteristics of consumers and the appointment of knee pads should be taken into account.

2. Develop a system of parameters that objectively describe the structure of the knee joint and the construction of the knee.

3. Develop a method for designing the knee pad construction, which will take into account the differences in the structure of the knee.

The development of a universal knee pad design as an element of sportswear will allow to satisfy the needs of a wide range of consumers and provide protection to the athlete, which is one of the most important functions of clothing for sports.

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## INVESTIGATION OF WET-HEAT TREATMENT OF CORE-SPUN COTTON/ POLYESTER YARN WITH THE USE OF ELECTROMAGNETIC WAVES OF ULTRA HIGH FREQUENCY

### ИССЛЕДОВАНИЕ ПРОЦЕССА ВЛАЖНО-ТЕПЛОВОЙ ОБРАБОТКИ КОМБИНИРОВАННОЙ ХЛОПКОПОЛИЭФИРНОЙ НИТИ С ИСПОЛЬЗОВАНИЕМ ЭЛЕКТРОМАГНИТНЫХ ВОЛН ТОКОВ СВЕРХВЫСОКОЙ ЧАСТОТЫ

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#### ABSTRACT

YARN, DEGREE OF BULK, MICROWAVE,  
BULK, SHRINKAGE

*The aim of the research is to develop a new technology for producing high-bulk yarns using microwave currents. The paper discusses experiments on increase of bulk of the core-spun yarn, results of research show 1,5-3 times increase in bulk of a yarn.*

#### АННОТАЦИЯ

ПРЯЖА, ОБЪЕМ, МИКРОВОЛНОВАЯ  
ПЕЧЬ, ОБЪЕМ, УСАДКА

*Целью проводимых исследований является разработка новой технологии получения высокообъемной пряжи с использованием токов СВЧ. В работе проведены эксперименты по повышению объемности комбинированной пряжи, результаты исследований показывают увеличение объемности пряжи в 1,5-3 раза.*

The principle of manufacturing textile materials with specific properties (high shrinkage and high bulk) is the mixing of high shrinkage (20 - 60 %) and low-shrinkage fibers and filaments. After joint processing, a textile material is produced that has the ability to increase its bulk as a result of wet-heat treatment in a unstrained state. In this case, the high-shrinkage component is shortened, taking a more definite orientation along the axis of the material. The low shrinkage component is wrapped around the high shrinkable one, taking a less oriented position in the same direction. This gives the material greater fluffiness, significantly reduces the bulk density and increases the transverse dimensions [1].

In our work we used as a high-shrinkage component a polyester shrinkage complex yarn linear shrinkage, which accounts for 48 % of the content, produced by OJSC «Svetlogorsk Khimvolokno» by the method of physical modification of the linear density of 16.8 tex. The cotton roving of the combed spinning system with a linear density of 250 tex was used as a low shrinkable component. Physical and mechanical properties indicators of high shrinkable yarn are shown in Table 1.

Table 1 - Characteristics of polyester high shrink yarn

Index	Indicator value
Nominal linear density of the thread, tex	16.8
Specific breaking load, mN / tex,	331
The elongation of the thread at break, %	30
Linear shrinkage, %	48
The number of entangling	14
Mass fraction of lubricant, %	1.3
Actual humidity, %	0.5

The methodology for conducting research into the process of increasing the bulk of a core-spun yarn, of various linear density using microwave electromagnetic waves consists of the following stages [2]:

1. Preparation of samples according to GOST 6611.0 - 73.
2. Moistening of the core-spun high-shrinkable threads to excessive moisture content.
3. Water removal to a residual moisture content of 100–300 %.
4. Wet-heat treatment by ultra-high frequency currents of electromagnetic waves.

A comparison of the performance of the core-spun cotton-polyester yarn before and after wet-heat treatment with electromagnetic waves of ultra-high frequency currents is presented in Table 2.

As a result of experimental studies, it is established that the use of complex high-shrinkage yarns enables to increase the bulk of the core-spun yarn by more than 200 %. Application of microwave currents enables to reduce the time of wet-heat treatment by 1.5 – 2 times compared to the traditional wet-heat treatment used in textile enterprises, which will allow increasing the bulk of output and reducing energy costs.

Table 2 – Comparison of a core-spun cotton-polyester yarn indicators before and after wet-heat treatment with ultra-high frequency currents of electromagnetic waves

Index	Indicator value	
	Before wet heat treatment	After wet-heat treatment
Composition	39 % – Polyester, 61 % – Cotton	
Linear density of the core-spun yarn, tex	42x2	53,5x2
Explosive loading, cN / tex	13,3	10
Explosive elongation, %	22.30	26
Diameter, mm	0.7	1.2
Bulk, g / cm <sup>3</sup>	4.58	10.54

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## ASSESSMENT OF THE SAFETY INDICATORS OF SOFT TOYS

### ОЦЕНКА ПОКАЗАТЕЛЕЙ БЕЗОПАСНОСТИ МЯГКОНАБИВНЫХ ИГРУШЕК

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#### ABSTRACT

SOFT TOYS, MARKING, CONSUMER PROPERTIES, SAFETY

*The article presents the results of organoleptic evaluation of toys appearance and studies of safety indicators (strength of joints and formaldehyde content) of soft toys made of textiles and artificial fur with fillers made of synthetic materials produced in Russia and China. The analysis of conformity of toys production to requirements of technical regulations of the Customs Union TR CU 008/2011 is given. Toys sold in the wholesale and retail market, have violations of the requirements of TR CU 008/2011 to the content of labeling and safety indicator in terms of formaldehyde content.*

#### АННОТАЦИЯ

ИГРУШКИ МЯГКОНАБИВНЫЕ, МАРКИРОВКА, ПОТРЕБИТЕЛЬСКИЕ СВОЙСТВА, БЕЗОПАСНОСТЬ

*В статье представлены результаты органолептической оценки внешнего вида игрушек и исследования показателей безопасности (прочности соединительных швов и содержания формальдегида) мягконабивных игрушек из текстиля и искусственного меха с наполнителями из синтетических материалов, произведённых в России и Китае. Проанализирована маркировка игрушек, на соответствие требованиям Технического регламента Таможенного союза ТР ТС 008/2011. У игрушек, реализуемых на оптово-розничном рынке, выявлены нарушения требований ТР ТС 008/2011 к содержанию маркировки и показателю безопасности – содержанию формальдегида.*

Toys are present in the life of a child almost from birth. They play an important role in the development of the child. Intellectual and personal development largely depends on what kind of games and toys surround the child. Toys help children learn the world around

them, teach them to purposeful, meaningful activities, develop imagination, intuition, form moral values, love to work, interest in technology, curiosity, observation, cultivate artistic taste, induce to creativity [1].

The toys sold in the consumer market have to meet certain requirements: compliance to problems of education and to children's age for which they are intended; to anthropometrical, physiological and psychophysiological features of children of certain age; non-failure operation, etc. Important consumer properties of toys are aesthetics, functionality, ergonomics: they should be beautiful, durable and safe.

Current trend is the demand for high requirements to quality and safety of toys and control of compliance of toys characteristics to children's age. The poor quality of toys in terms of hygiene (for example, a strong smell, dust content, sharp noise, vibration, etc.) can negatively affect the child's organism. A lot of things depend on materials of which toys are made and if their form and design exclude a possibility of accumulation of dirt and development of pathogenic microbes, and how easy it is to clean the toys.

As objects of a research the soft toys purchased in a specialized shop and in the wholesale and retail market were examined: heroes of animated films of the Disney company – «Tigger» from a series «Winnie-the-Pooh and his friends», Mickey Mouse. The toys purchased in a shop have certificates while those purchased at the market do not have certificates.

Each toy is marked with the label «Not for children under 3 years old» according to GOST 30782-2001 [2]. Labeling of toys sold by the specialized shop corresponds to regulatory documentation. Toys purchased at the market violated the requirements for labeling: the toy «Tigger» 2 is not labeled, the toy «Mickey Mouse» 2 is marked with the label which shows only children's age.

At organoleptic assessment of the toys purchased at the wholesale and retail market the asymmetry of pair details and existence of the free not cutoff ends of sewing threads are found. All toys do not contain solid or sharp inclusions in the filler. Small plastic parts (eyes) are firmly fixed, the paint coating of the toy «Mickey Mouse» 2 is resistant to friction.

Durability of seams of the examined soft toys conform to requirements of GOST 25779-90 for durability. The content of formaldehyde of the materials of the toys sold by the specialized shop conforms to requirements of TR TS 008/2011, the toys purchased at the wholesale and retail market demonstrate exceeding admissible level.

Thus, it is confirmed that the product (in this case, the soft toy), which is sold in specialized shops, as a rule, have certificates confirming quality compliance to requirements of standard documentation. As the results of the study show, this applies to both Russian and Chinese toys. Toys sold in the wholesale and retail market often do not meet the safety requirements and their labeling is either missing or incomplete. Hence, it is recommended to buy certified toys for children in specialized shops.

Table 1 – Results of evaluation of labeling and safety indicators of toys

Name of the indicator		The name of the toy			
		«Tigger» 1*	«Tigger» 2*	«Mickey Mouse» 1*	«Mickey Mouse» 2*
Country of manufacture		China	China	Russia	China
Material		artificial fur, synthetic filling		textile (100% polyester), synthetic filler	
Labeling compliance with requirements [2]		corresponds	not present	corresponds	not respond (incomplete)
Strength of seams, N	normative	over 70±2 [3]			
	actual	corresponds			
The content of free formaldehyde, mcg/g	normative	less 50 [4]			
	actual	24	133	40	162

\* Note: 1 – the toy is purchased in a specialized shop, 2 – the toy is purchased at the wholesale and retail market.

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## YARN PRODUCTION OF PRESET PROPERTIES BY SORTING OF COTTON FIBRES ACCORDING TO THEIR MATURITY

### ПРОИЗВОДСТВО ПРЯЖИ ЗАДАНЫХ СВОЙСТВ ПУТЕМ РАССОРТИРОВКИ ХЛОПКОВЫХ ВОЛОКОН ПО СТЕПЕНИ ИХ ЗРЕЛОСТИ

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#### ABSTRACT

COTTON FIBER, MATURITY, FRACTION,  
DIELECTRIC SEPARATOR, TRIBOELECTRIC  
SEPARATOR, YARN, GRADE.

*The question of irregularity of cotton fiber properties and the ways of their adjustment. This is due to the fact that the cotton balls open asynchronously and one after another on the branches. Non-simultaneous opening of cotton balls on the bush is considered as a negative phenomenon, because it leads to the formation of fiber properties and hence the irregular property of yarn made from it. Calculations resulted in the index  $R_{km}$  yarn and conclusion on the need of evaluation of before break mechanical characteristics of the yarn.*

#### АННОТАЦИЯ

ХЛОПКОВОЕ ВОЛОКНО, ЗРЕЛОСТЬ, ДИ-  
ЭЛЕКТРИЧЕСКИЙ СЕПАРАТОР, ТРИБОЭЛЕК-  
ТРИЧЕСКИЙ СЕПАРАТОР, ПРЯЖА, СОРТ

*Рассматривается вопрос неравномерности по свойствам хлопкового волокна и пути их выравнивания. Это связано с тем, что коробочки хлопчатника раскрываются на плодовых ветвях неодновременно, а последовательно одна за другой. Неодновременность раскрытия коробочек на кусте хлопчатника также является отрицательным явлением, т.к. приводит к образованию неровноты по свойствам волокна и, следовательно, по свойствам пряжи из него. В результате расчетов определен показатель  $R_{km}$  пряжи и сделан вывод о необходимости оценки показателей доразрывных механических характеристик пряжи.*



It is known that the cotton balls open one after another on branches of cotton cones at different times. Even in a single ball the fibers on the seeds ripen faster, which are located closer to the branches. Fibers, that are growing on the blunt end of the seed - the chalazae, they are usually longer, but less mature and therefore less stable. Thus, balls and seeds they contain are differing from each other mainly by the degree of fiber maturity. Non-simultaneous opening of the balls on the cotton bush is a negative phenomenon, as it leads to the formation of fibers with irregular properties hence the irregular property of yarn made from it. The indicators of physical and mechanical properties of the resulting yarn will have a higher irregularity, which is reducing quality of its category.

According to the yearly cotton exhibition and textile indications the quality of cotton fibers has been improving in Uzbekistan every year. Lately, in Uzbekistan mainly of cotton fibers of type 4 and 5 have been cultivated. Additionally, the possibility of production of assortment of yarn, it can be said, limited data types, i.e. the physical and mechanical indicators of yarn produced limited performance properties of data types.

To expand the possibilities of producing yarn of a higher category the device was designed for sorting out according to the degree of raw cotton fiber maturity [1, 2]. Thus, the challenge to increase the competitiveness and improve the image of the world cotton market products addressed by the selection of the most mature fibers from the raw materials in an electric field generated by a turboelectric separator [3]. For this leaflet raw cotton detachment cotton 2nd commercial grade separated into four fractions (groups), physical and mechanical properties in the fibers of which are presented in Table 1.

Table 1 – Physical and mechanical properties of the fiber

<b>Fractions</b>	<b>Exit, %</b>	<b>Breaking load, sN</b>	<b>Linear density, mtex (micronaire)</b>	<b>Coefficient of maturity</b>	<b>Breaking tenacity, sN/tex</b>	<b>Grade</b>
First	53,3	4,6	191 (4,85)	2,0	24,1	First
Second	21,8	4,3	180 (4,57)	1,9	23,9	Second
Third	14,2	3,6	154 (3,91)	1,7	23,4	Third
Fourth	10,7	3,5	150 (3,81)	1,6	23,3	Third
Background	100	4,1	173 (4,39)	1,9	23,7	Second

As it can be seen from the table the first fraction corresponds to the first class, and its share is 53.3 %. Breaking strength of the fiber in this group of 4.6 cN that 0,5sN (11 %) more than the original fiber (4,1sN). Maturity Ratio of the first group of fibers is 2.0, and the source has a coefficient of 1.9. The second group corresponds to the 2nd grade with a yield of 21.8 % and a tenacity of 4.3 cN, which differs from the original in 5 %. The third and fourth fractions correspond to class 3rd, respectively a tenacity of 3.6 cN and 3.5, 0.5 and 0.6 cN less than the initial fiber.

Important criteria are cotton fiber maturity and breaking load. Higher maturity and greater breaking load of the first fiber fraction is due to the fact that as a result of passing through an electric field leaflet of cotton removed less mature and weaker fibers. This phenomenon is explained of A.Rosabaev [3] that with increasing weight decreases leaflet, leaflet fiber strain and the multiplicity of electric force pressing them. This increases the elasticity of the fibers, alongside with increasing weight increase leaflet physic-mechanical properties of the fibers and seeds (maturity, grade, elasticity, etc.). Therefore, leaflet raw cotton fibers with high grade and hence less deformed greater elasticity than the fibers leaflet raw cotton low grade and less elastic. This explains the weak pressing more mature fibers leaflet and earlier, their separation from the charged surface of the separator. Note that the second fraction of the fibers may be sorted if necessary; the more mature the fibers, which is necessary to pass repeatedly through the electric field group. Thus, it is possible to regulate the proportion specified quality fibers depends on consumer demand. Therefore, reducing irregularity on the degree of maturity of cotton fibers we can achieve the production of a given yarn quality category.

To predict the rupture characteristics of cotton yarn, in particular, the index  $R_{km}$  we use the formula proposed by South Indian textile research center (SITRA) [4]:

for carded yarn:

$$R_{km} = 1,27 \left( \sqrt{\frac{L \cdot R_b}{M}} \right) + 4,0 - 13 \cdot \frac{N_e}{150}, \text{ gf/tex}$$

for combed yarns:

$$R_{km} = 1,27 \left[ \left( \sqrt{\frac{L \cdot R_b}{M}} + 4,0 - 13 \cdot \frac{N_e}{150} \right) \cdot \left( 1 + \frac{Y}{100} \right) \right], \text{ gf/tex}$$

where  $L$  – mean fiber length, mm;  $R_b$  – relative breaking load of fiber, gf/tex;  $N_e$  – english yarn number;  $Y$  – the proportion of comb crest tow, %;  $M$  – micronaire fibers, mg/inch.

In this paper the forecasting index  $R_{km}$  carded and combed yarn linear density of 20 tex, and, with a share of 17 % tow. Used fiber cotton breeding varieties with 6524, which in its original form had an average length of 33.5 mm, the relative tensile strength of 4.1 gf/tex; micron ire of 4.39 mg / in. After sorting leaflet on the degree of maturity of its fiber average length remains unchanged. The relative breaking load and micron ire changed compared to the originally fiber that is presented in Table 1. Based on these parameters

relative prediction performed yarn breaking load using the above formulas. The results of calculation are shown in Table 2.

Table 2 – Physical and mechanical properties of the fiber and yarn indicator  $R_{km}$

Fractions	Upper half mean length, mm	Breaking load of fiber, cN	Linear density of the fibers, mtex (micronaire)	Coefficient of maturity	Breaking tenacity of fiber, cN/tex	Yarn Rkm, cN/tex
First	33,5	4,6	191 (4,85)	2,0	24,1	17,82
Second	33,5	4,3	180 (4,57)	1,9	23,9	18,34
Background	33,5	4,1	173 (4,39)	1,9	23,7	18,50

Based on these parameters relative prediction performed yarn breaking load using the above formulas. As can be seen from the table, less mature and less durable fiber provides a more solid yarn, which is a paradoxical phenomenon. Therefore, to evaluate the mechanical characteristics of the yarn only discontinuous characteristics are not enough, in connection with which there is a need to evaluate the mechanical characteristics of the yarn parameters before rupture characteristics.

Repeated experiments were carried out, in which the leaflets raw cotton on a triboelectric separator were sorted by fractions (Fig. 1). As it can be seen, leaflets raw cotton by mass are distributed according to a successive decreasing law (167 mg, 164 mg, 158 mg, 147 mg) and fall into the corresponding cells of the received hopper.

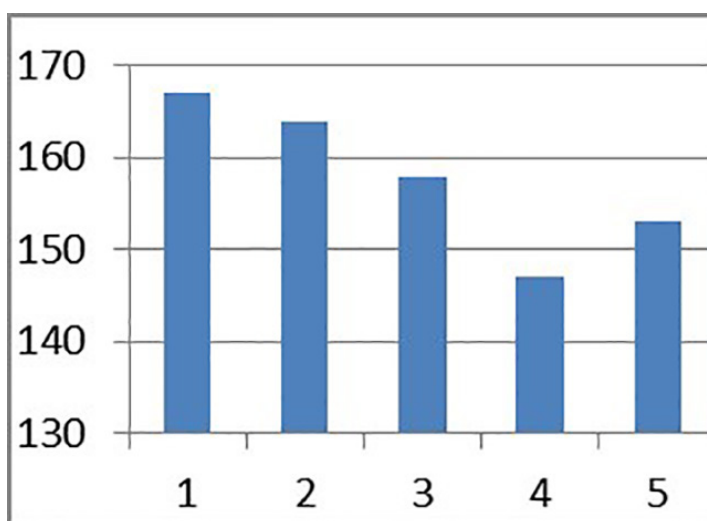


Figure 1 – Distribution of volatiles by mass

Thus, based on the prediction of yarn index it is found that for evaluating yarn mechanical characteristics additional studies are to be carried out to determine the indicators before breaking its characteristics, in particular the modulus of elasticity.

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## TEXTILE WASTES AND THE AREAS OF THEIR APPLICATION

## ТЕКСТИЛЬНЫЕ ОТХОДЫ И НАПРАВЛЕНИЯ ИХ ИСПОЛЬЗОВАНИЯ

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### ABSTRACT

*TEXTILE WASTE, WASTE PROCESSING,  
NONWOVEN FABRIC*

*The article gives an overview of areas of textile waste utilization and it proposes one of the options of their use as an integral component for the production of heat and noise insulation materials. The proposed option allows to obtain construction*

### АННОТАЦИЯ

*ТЕКСТИЛЬНЫЕ ОТХОДЫ, ПЕРЕРАБОТКА  
ОТХОДОВ, НЕТКАНЫЕ МАТЕРИАЛЫ*

*В статье представлен обзор направлений использования текстильных отходов, предложен один из вариантов их использования в качестве составного компонента для производства тепло- и шумоизоляционных*

*and engineering materials with the best properties of heat protection, noise and vibration isolation, as well as to expand the possibilities of using textile waste.*

*материалов. Предложенный вариант позволяет получить материалы строительного и машиностроительного назначения с лучшими свойствами теплозащитности, шумо- и виброизоляции, а также расширить возможности использования текстильных отходов.*

Currently, despite the enormous efforts in the field of waste recycling, the problem of waste disposal remains very serious. According to the Ministry of Environmental Protection of the Republic of Belarus, light industry wastes amounted to 119.9 thousand tons in 2016. And 126.6 thousand tons in 2017, that is 0.26 % of all waste from the manufacturing industries. In fact 0.26 % is not much, but in just a year their volume increased by 14.7 thousand tons, which accounts for 11.6 % increase.

In the industrial production of textiles, waste is generated in the form of cabbage, end residues, tangled fibers, yarn ends, etc. We are talking about those textile waste that can serve as a raw material for other types of production.

Currently, the work of all enterprises is aimed at:

- 1) prevention and minimization of waste (rational use of raw materials, rationing of all types of materials used),
- 2) secondary use of primary raw materials (e.g. padding or production of non-core products),
- 3) recycling of waste for use as the primary or secondary component in materials mixes, etc.,
- 4) disposal (incineration, hydrolysis, disposal).

The first two directions are most preferable, but they do not make production completely waste-free. Disposal is harmful to the environment and is not a justified waste of scarce resources

As an alternative to expanding the scope of waste use, EI «VSTU» offers a technology of the production of non-woven materials by means of thermal bonding engineering and construction purposes. The technology of obtaining nonwoven materials by the method of thermal bonding includes the following basic operations: preparation of raw materials, formation of a fibrous base, fiber bonding. Table 1 shows the composition of the experimental mixtures.

Polyester fiber is a hollow highly-twisted non-siliconized fiber. Wastes of sewing production at the enterprise come in the form of cabbage and are subjected to grinding with the help of a bale plucker, after which they acquire the appearance of regenerated fibers. Figure 1 shows the appearance of the obtained samples

Table 1 – Raw material composition of the mixture of fibers

№	Fiber Composition	Percentage, %
1	– cutting waste	42
	– polyester bicomponent fiber	15
	– polyester fiber	43
2	– cutting waste	65
	– polyester bicomponent fiber	15
	– regenerated fiber (chopped cabbage in sewing production)	20

Sample No. 1



Sample No. 2

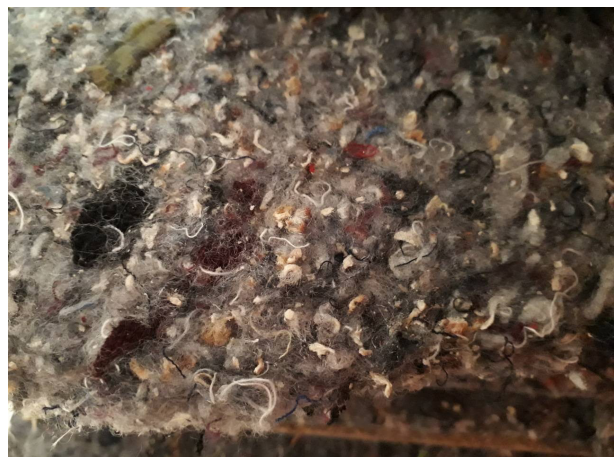


Figure 1 – Appearance of prototypes

As a result, samples of non-woven materials were obtained. Their properties and areas of their further application are presented in Table 2.

The materials obtained from polyester fibers using the cutting wastes in comparison with similar materials without the addition of waste, have a higher density, which will increase the thermal insulation and noise insulation properties. The resulting thermal insulation materials, due to the unique arrangement of fibers and the homogeneity of the products, retain their shape and size during operation, both in horizontal and vertical positions. Thus, the introduction of the cutting waste into the composition of non-woven materials made it possible to increase their weight, density, hardness and carcass.

Table 2 – properties of the samples

<b>№ sample's</b>	<b>Thickness, mm</b>	<b>Surface density, g/m<sup>2</sup></b>	<b>Domain of usage</b>
1	50	34	Heat insulation
	40	46	
	20	65	Heat and noise insulation
2	50	59	Heat insulation
	15	46	Heat and noise insulation
	5	46	Substrate for laminate and linoleum

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## EXPLORATION OF THE GRAPHIC FORM OF A RAGLAN SLEEVE PRODUCT DESIGN

### ИССЛЕДОВАНИЕ ГРАФИЧЕСКОЙ ФОРМЫ КОНСТРУКЦИИ ИЗДЕЛИЯ С РУКАВОМ ПОКРОЯ РЕГЛАН

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#### ABSTRACT

CONSTRUCTIVE MODELING, RAGLAN SLEEVE, PARAMETRIC DESIGN, GRAPHIC FORM, GARMENT DESIGNING, COMPUTER-AIDED DESIGN

*The article presents the results of the exploration of graphic form of a raglan sleeve product design from the point of view of the drawing division into graphic elements. These graphic elements will be further described in parameters. This principle of parametric description will enable to formalize the stages of a raglan sleeve design and, in prospect, to develop algorithms for developing raglan sleeve product designs in parametric CAD.*

#### АННОТАЦИЯ

КОНСТРУКТИВНОЕ МОДЕЛИРОВАНИЕ, РУКАВ ПОКРОЯ РЕГЛАН, ПАРАМЕТРИЧЕСКОЕ ПРОЕКТИРОВАНИЕ, ГРАФИЧЕСКАЯ ФОРМА, КОНСТРУИРОВАНИЕ ОДЕЖДЫ, АВТОМАТИЗИРОВАННОЕ ПРОЕКТИРОВАНИЕ

*В статье изложены результаты исследования графической формы конструкции изделия с рукавом покроя реглан с точки зрения разбиения чертежа на графические элементы. В дальнейшем эти графические элементы будут параметрически описаны. Такой принцип параметрического описания позволит формализовать этапы построения рукава покроя реглан и в перспективе разработать алгоритмы для проектирования конструкций изделий с рукавом покроя реглан в параметрических САПР.*

Raglan designing is a complex multifactorial process. Currently, raglan sleeve products design is a weakly formalized process. This is due to the following facts:

- there is no clear and unambiguous algorithm for raglan sleeve products design (practically all methods contain stages with recommended values of design parameters,



as well as a descriptive sequence of actions, the result of which depends on the designer's experience) [1];

- the algorithm for the raglan sleeve product appearance forecasting on the basis of design parameters is not developed;
- the method for reading the sketch, on the basis of which the values of design parameters in the design are determined, is not developed.

As a result of the reasons listed above, the process of raglan sleeve products designing and manufacturing is accompanied by numerous fittings and adjustments.

Automation tools active development, within the framework of the computer-aided design of sketch designs [2, 3], basic designs [4], model designs [5] predetermines the need for formalization and algorithmization of raglan sleeve products designing process. Orientation of the product design process in a three-dimensional environment [6] and active use of virtual space for fittings [7] and simulation modeling of products model characteristics [8] have a great influence on the modern development of garment design theory, as well.

Within the framework of the undertaken exploration, the graphic form of the raglan sleeve product was analyzed from the point of view of the drawing division into graphic elements in order to further develop the system of parameters controlling the product form. With the help of this system, a parametric description of the construction and the spatial form of the raglan sleeve product will be developed further. These explorations are based on the methodology described in the article «Generalized model of parametric garment designing process» [9].

At the first stage of work the product construction was divided into component graphic elements. There are 18 graphic elements. By changing a geometry of these elements, it is possible to obtain a variety of raglan sleeve products forms. In these explorations, the main part was not considered in detail, therefore it is represented in the table as a single element. Its more detailed study is expected in the future.

Groups of geometric elements (GE) are defined in terms of:

- geometric characteristics of raglan sleeve products spatial form;
- possibility of developing a rational system of design parameters which describe a raglan sleeve product spatial form and design;
- possibility of developing a construction algorithmic description.

Development of a system of product design graphic elements was carried out in the following sequence:

- design dividing into the product parts (front and back parts of the design are distinguished);
- design dividing into graphic sections according to the structural lines levels (top, central, bottom parts are distinguished);

- graphic sections dividing due to location on the arm surface (inner, outer surface of the sleeve are distinguished).

As a result of the work, the following GEs are distinguished:

- Front/back part of the raglan
- Front/back top part of the sleeve cap
- Front/back bottom part of the sleeve cap
- Front/back bottom inner part of the sleeve cap
- Front/back central outer part of the sleeve
- Front/back central inner part of the sleeve
- Front/back bottom outer part of the sleeve
- Front/back bottom inner part of the sleeve
- Front/back part of the body.

The next stage of the research is the description of graphic fragments with the help of which the geometric shape of the graphic element is formed. For example, the front (rear) part of the raglan is defined by the lines: the upper section of the neck slice, shoulder section, the conditional armhole line, the upper section of the raglan line.

For each line, you can define three parameters by which it will be possible to change its shape and position — these are the parameters of the starting and ending points of the line and the shape of the line. Having determined the whole set of parameters for the raglan design, in the future it is proposed to develop a technique for parametric design of clothing designs with a raglan sleeve.

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## DEVELOPMENT OF TECHNOLOGY FOR PRODUCING YARN FROM BLENDS OF COTTON AND NITRON FIBER

### РАЗРАБОТКА ТЕХНОЛОГИИ ПОЛУЧЕНИЯ ПРЯЖИ ИЗ СМЕСИ ХЛОПКОВОГО И НИТРОНОВОГО ВОЛОКНА

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#### ABSTRACT

COTTON, NITRON, LINEAR DENSITY,  
ELONGATION, FIBER, STAPLE LENGTH,  
BREAKING LOAD

*The article deals with the properties of synthetic nitron fiber. The possibility of its processing of the blends with cotton fiber is investigated and the advantages of blended yarns are revealed.*

#### АННОТАЦИЯ

ХЛОПОК, НИТРОН, ЛИНЕЙНАЯ ПЛОТНОСТЬ, УДЛИНЕНИЕ, ВОЛОКНО, ШТАПЕЛЬНАЯ ДЛИНА, УДЕЛЬНАЯ РАЗРЫВНАЯ НАГРУЗКА

*В статье рассматриваются свойства синтетического волокна нитрон. Исследуются возможности его переработки смеси с хлопковым волокном и выявлены преимущества по показателям смесовой пряжи.*

One of the most promising areas for the development of the textile and light industry is the production of yarn, fabrics and knitted fabrics, and products made from chemical and natural fiber blends.

Among the large tonnage of chemical fibers used in textile processing mixed with natural fibers, the leading place is occupied by polyamide (Capron), polyester (Lavsan) and polyacrylonitrile (Nitron) fibers. Threads from these fibers are processed both in pure form, and in blends with other fibers. They have found wide application in knitted, silk, woolen and in other branches of the textile industry. The obtained filaments from blends of nitron and cotton fiber give the fabrics and knitted fabrics a new complex of properties: resistance to abrasion, form stability, small shrinkage and others. Using them as weft fibre gives the products the necessary softness, elasticity, hygiene, pleasant feel. The main attention in this case should be given to improving the appearance of knitted fabrics and fabrics due to the exnitronion of the color range, the use of dyes of various classes and the use of more

diverse patterns in packing.

As it is known, nitron fibers are highly resistant to light and weathering, and by these parameters they exceed almost all known textile fibers.

Features of mechanical properties of staple nitron fibers predetermine their textile and technological behavior characteristics in spinning processes [1].

Synthetic nitron fiber in many cases is a substitute for wool and cotton. It has a number of properties, due to which nitron is a valuable raw material in the textile industry. Nitron fiber is used with other fibers in different ratios.

Nitron fiber has high strength, but it is somewhat lower than that of polyamide and polyester. The advantage of the nitron is its low density ( $1.17 \text{ g/sm}^3$ ). The breaking elongation of the nitron is 16-20 %. The nitron fiber and its copolymers have a high initial modulus of elasticity, that is, they resist tensile stresses with multiple loads, so that the appearance of the products from these fibers is restored after crushing. At normal relative humidity (65 %), the fiber sorbs moisture from the air in volume less than 1 %. Nitron fiber in the wet state slightly loses its strength.

To improve the technological properties of the fiber and reduce static charges, an experiment was performed in which the nitron was treated with an antistatic «triamon». The processed nitron fiber is subjected to mixing with a cotton fiber selection C-4727 (table 2).

Table 1 – Physical and mechanical properties of fiber nitron

<b>№</b>	<b>Name of indicators</b>	<b>Indicator values</b>
1	Linear density, tex	0.17
2	Tenacity of fiber, mN/tex	324
3	Elongation of fiber at break, %	27
4	Tenacity of fiber with a loop break, mN/tex	81
5	Average staple fiber length, mm	37.8
6	Coefficient of variation of staple fiber length, %	2.22
7	Number of twists per 10 mm	3.7

Experimental studies were carried out in the conditions of the educational production laboratory of the Department «Technology of spinning» according to the methodology set forth in the «Instruction for technical control in cotton spinning».

Table 2 – Physical and mechanical properties of cotton fiber C-4727

No	Name of indicators	Indicator values
1	Staple length, mm	33.1
2	Linear density, tex	0.180
3	Breaking load of fiber, cN	5.0
4	Tenacity of fiber, cN /tex	28.0
5	Content of short fibers, %	8.2

Sampling from the general population was performed according to the procedure with a confidence probability of  $P = 0.95$ . All tests were carried out on three surfaces.

Yarn of linear density 18.5 tex was produced on the «Trutzschler» equipment: bale opener – BO-C; condenser – LVSA; baking powder – BE-963; three drum cleaners – CVT-3; aerodynamic cleaner – DX; carding machine – DK-903; drawing machine - HSR-1000; roving machine – Zinser-668; spinning machine – Zinser-350, and with a different blends ratio.

As the first component of the raw material for the production of blended yarn, cotton fiber of type V, sort I of selection C-4727.

I option: cotton fiber 83 %  
nitron fiber 17 %

II option: cotton fiber 67 %  
nitron fiber 33 %

When carrying out experiments according to the technical control in cotton spinning, the parameters of semi-finished products and yarn were checked, which were then compared to the normative indexes.

Samples of yarn were subjected to tests for determining their physical and mechanical properties. The results of testing a linear density of 18.5 tex yarn are shown in Table 3.

Analysis of the data in the table shows that cotton-nitron yarn has a greater uniformity across the tensile load values. Tenacity has almost equal values. The main characteristic of the finished yarn is the quality index, which, as can be seen from the table, cotton yarns II as well as cotton yarns I, respectively, have 28.0 and 20.0 % corresponding to the first grade. The breakage of cotton yarn is 10 % below normal, and cotton yarn is 11 % higher than normal. It should be noted that all tests were carried out according to the developed regulation of equipment for cotton fiber.

Thus, the results of the experimental tests showed that cotton-nitron yarn has higher quality indexes.

Table 3 – Physical and mechanical properties of yarn

№	Indicators	The norm in accordance with GOST - 9092-81	Option		Deviation, %	
			I	II	I	II
1	The linear density, tex	18.5	18.7	18.6	+2.0	+1.0
2	Tenacity, cN/tex	I sort – 11.5 II sort – 10.6 III sort – 9.8	11.6	11.3	+1.0	-2.0
3	Coefficient variation of tenacity, %	I sort – 13.8 II sort – 16.2 III sort – 18.8	11.2	9.9	-19.0	-29.0
4	Level of quality	I sort – 0.83 II sort – 0.66 III sort – 0.52	1.03	1.14	+20.0	+28.0

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UDC 677.074 : 745.52

## SKETCHES OF INTERIOR FABRICS IN KALEIDOSCOPE STYLE

### ЭСКИЗЫ ТКАНЕЙ ДЛЯ ИНТЕРЬЕРА ПО МОТИВАМ КАЛЕЙДОСКОПА

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#### ABSTRACT

*FABRIC, INTERIOR, SKETCH, FABRIC  
COLLECTION, PRINTED PATTERN*

*The article deals with the expansion of the linen fabrics range for the interior, as well as the problems of their design. A collection of fabrics in trending colors is developed.*

#### АННОТАЦИЯ

*ТКАНЬ, ИНТЕРЬЕР, ЭСКИЗ, КОЛЛЕКЦИЯ  
ТКАНЕЙ, ПЕЧАТНЫЙ РИСУНОК*

*В статье рассматриваются вопросы расширения ассортимента льняных тканей для интерьера, а также проблемы их проектирования. Создана коллекция тканей в актуальной цветовой гамме.*

Currently, it is important to expand the range of interior fabrics, improving their quality and aesthetic properties. Analysis of fashion trends of interior styles allowed to identify the type of ornament that is modern and can be used for further design of kaleidoscopic pattern.

The purpose of this article is to identify the principles which serve as the basis of the process of implementing the ideas of creating one of the textile interior elements – decorative pillows with a printed pattern. To achieve this purpose, the following tasks are set: to determine the shape of products, to create a collection of printed drawings of fabrics for decorative pillows.

It is established that an unconventional method is to develop the basic idea of the collection by combining three creative sources within one artistic image: kaleidoscope, stained glass, as well as the style and technique of Vincent van Gogh's works. In accordance with this, the stylistic solution and the combination of colors of the collection were determined: the fragmentation of elements into small segments, as well as ocher-gold and blue-light blue colors with gradation from light to dark.

The kaleidoscope motif is quite popular among designers. It is often found in the form



of jewelry, it is used as accents of color and texture spots in the interiors, in the garments design, as well as in the design of architectural structures (Fig. 1).



Figure 1 – The use of the motif of kaleidoscope: a) decoration; b) interior; c) clothing; d) architecture

In the process of implementation of the preparatory work the analysis of information sources was made, the set of rational shape and size of the product was chosen with the following parameters: square shape 60x60 cm. Linen fabric was chosen as the basic material which corresponds to product characteristics. For drawing on a fabric was chosen a digital method.

As a result of modeling with the use of advanced computer software, Adobe Photoshop graphic package, eight variants of fabric sketches for decorative pillows were designed (Fig. 2).

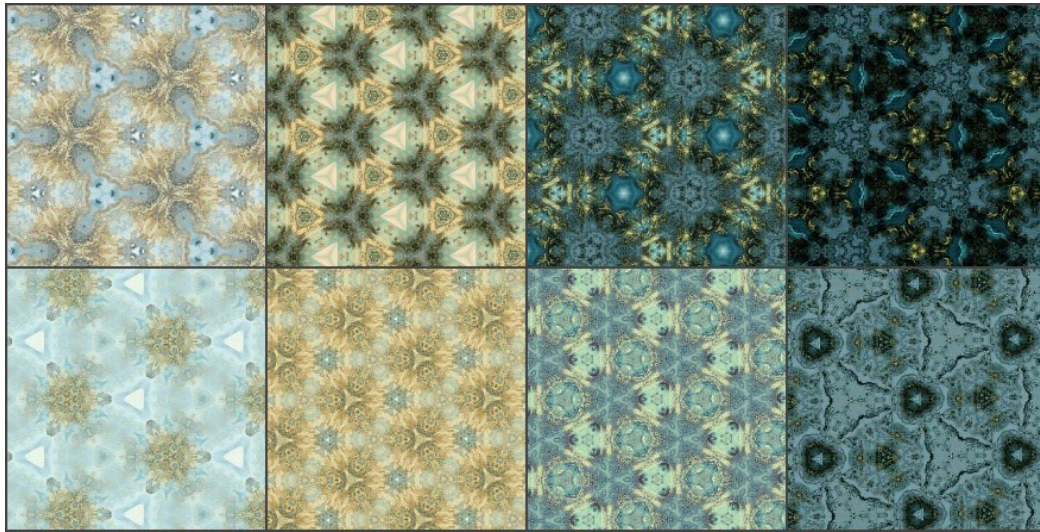


Figure 2 – Sketches of fabrics collection for decorative pillows

Sketches in the collection are arranged in a sequence that allows the most active disclosure of their color and graphic characteristics. The plastic solution of the drawings is based on the principle of complex geometric shapes flowing into smooth elements. Attention is focused on a graphical supply: used spot and linear-spot graphics. The sequence of the sketches allows to most clearly reveal their color and graphic features.

The principles of artistic and compositional construction of a collection of fabrics for decorative pillows with a printed pattern are introduced in the educational process of Vitebsk State Technological University. Products can be used for living room or bedroom interior decoration.

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УДК 681.786.23

## FEATURES OF HUMAN FIGURES 3D SCANNING

### ОСОБЕННОСТИ 3D-СКАНИРОВАНИЯ ФИГУРЫ ЧЕЛОВЕКА

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ABSTRACT

*3D-SCANNER, 3D SCANNING TECHNOLOGY, CLOTHING DESIGN, DIMENSIONAL SIGNS*

*The article deals with the expansion of the linen fabrics range for the interior, as well as the problems of their design. A collection of fabrics in trending colors is developed.*

Non-contact methods are becoming increasingly popular for obtaining information about the dimensional signs of a human figure [1]. There are various systems for scanning and measuring the anthropometric characteristics of the human body.

There are many universal and highly specialized 3D scanning systems presented on the market. Universal systems are designed to scan a human figure as a whole [2, 3]. Specialized systems are widely used in medicine and provide a more detailed 3D model of individual parts of the human body: arms [4], legs [5], chest [6], etc.

Modern 3D scanners allow to get a computer model of the scanned object. The required dimensional characteristics can be measured on the 3D model later.

As part of this work, the task was to measure the size of a human figure for the purpose of designing clothes. 3D models were obtained using a 3D scanner consisting of 4 Kinect sensors mounted on a fixed bar and a rotating platform [7].

The quality of scanning depends on the technical characteristics of the scanning system: the resolution of optical sensors, their number, features of the design, etc., and the features of the scanned object.

In this work, the influence of the position of the human body and its features on the accuracy of measurements of clothing sizes was studied.

The popular models of bodyscanners on the market were analyzed: Artec Shapify Booth, Artec Eva, 3dMDbody.t System, Botscan, VECTRA WB360, Fit3D, mPort mPod, Naked 3D Fitness Scanner, SS20 3D Body Scanner, Styku S100, TELMAT Symcad III, Texel Portal, Twindom Twinstant Mobile, Vitronic VITUS 3D body Scanner, Shapescape, zSnapper 360 Scan, Human Solutions 3D body scanning, Chishine3d RayGo240, 3D Elements, Shapeanalysis 3D Body Scanner. As a result of the analysis, two basic positions of the legs and four basic positions of the hands were identified. This allows to make 8 unique combinations of poses, shown in Figure 1.

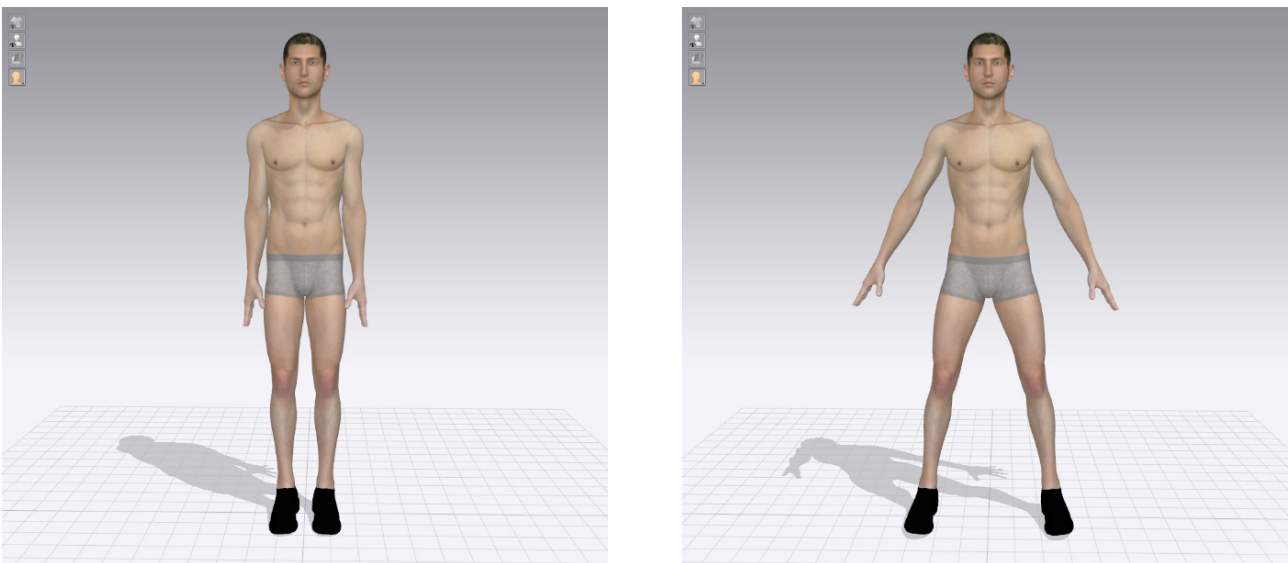


Figure 1 – Position for measuring the size of human's bodies for designing clothes

Figure 1a shows the posture that corresponds the requirements of the standards [8, 9, 10, 11] for measuring the size of human's bodies for designing clothes using the contact measurement method. Figure 1b shows the posture most often recommended by the developers of the botanical systems.

As shown by experimental studies, the difference in the results of measurement of chest girth in middle-aged women in different postures can be 1.5–2 cm. For clothing of free and semi-adjacent silhouettes, this difference may be insignificant due to the use of increases in the freedom of fitting from 10 cm. Designers of clothing with an adjacent silhouette should have this in mind when developing the basic design of a garment.

As a result of the study, a number of recommendations were developed, which enabled to obtain a 3D human model suitable for measuring dimensional signs of a human figure for designing clothes.

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## Section 2. SOCIAL, HUMANITARIAN AND ECONOMIC PROBLEMS OF EDUCATION AND SCIENCE DEVELOPMENT IN THE 21TH CENTURY

UDC 331.1; JEL Classification: M10, M21

### LABOUR COST MANAGEMENT AS AN ELEMENT OF ORGANIZATION'S PERSONNEL POLICY

### УПРАВЛЕНИЕ ЗАТРАТАМИ НА ПЕРСОНАЛ КАК ЭЛЕМЕНТ КАДРОВОЙ ПОЛИТИКИ ОРГАНИЗАЦИИ

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#### ABSTRACT

LABOUR COSTS, LABOUR COSTS  
STRUCTURE, LABOUR COSTS MANAGEMENT,  
HR POLICY, HR POLICY PRIORITIES

*In this article, labour costs at the micro level are considered as an element of HR policy, reflecting the priorities of its financing. In the course of the labour costs study, a discrepancy in the labour costs structure with the priorities of an active HR policy was revealed. The need to change the structure of labour costs to ensure compliance with the priorities of HR policy proved. The expected result is an improvement in the organization's performance targets and staff efficiency.*

#### АННОТАЦИЯ

ЗАТРАТЫ НА ПЕРСОНАЛ, СТРУКТУРА ЗАТРАТ  
НА ПЕРСОНАЛ, УПРАВЛЕНИЕ ЗАТРАТАМИ НА  
ПЕРСОНАЛ, КАДРОВАЯ ПОЛИТИКА, ПРИОРИТЕ-  
ТЫ КАДРОВОЙ ПОЛИТИКИ

*В данной статье затраты на персонал на микроуровне рассматриваются как элемент кадровой политики, отражающий приоритеты ее финансирования. В ходе исследования затрат на персонал выявлено несоответствие структуры затрат на персонал приоритетам активной кадровой политики. Доказана необходимость изменения структуры затрат на персонал для обеспечения соответствия приоритетам кадровой политики. Ожидаемым результатом является улучшение целевых показателей деятельности организации и эффективности использования персонала.*

Personnel policy of the organization determines the main directions of impact on the staff of the organization to ensure its effective involvement in achieving the goals of the organization. As personnel becomes a key resource that determines the competitiveness and success of an organization, personnel policy and tools for its implementation are becoming of particular significance. Personnel policy is designed to create the conditions for meeting the need for personnel, attracting and developing highly qualified and motivated employees capable of ensuring the organization’s success in the market.

One of the most important tool for the personnel policy implementation is the determining the need for labour costs financing in accordance with the priorities of personnel policy, as well as the choice of sources of financing these costs.

Employee personnel costs are one of the key indicators that reflect the cost of labor, as well as the value of personnel for the organization. The content and structure of labour costs reflects the priorities of the company's personnel policy and serves as an object of analysis and management for personnel services. Table 1 presents the features of the personnel policy types and the nature of labour costs corresponding to each type.

Table 1 – The impact of personnel policy on the nature of labour costs

<b>Personnel policy type</b>	<b>Characteristics</b>	<b>Nature of labour costs</b>
Passive	forced reaction to personnel problems; emphasis on operational staffing decisions; formal evaluation of personnel and labor performance; unsystematic nature of learning; implicit nature of staffing priorities	dominance of wages and mandatory deductions; low level and random nature of investment labour costs; not all types of expenses are funded
Active	forecasting the need for personnel and their satisfaction; active impact on the personnel situation; monitoring team motivation and climate; availability of personnel programs	a significant proportion of the cost of training and development of personnel in the labour costs structure; financing of all or almost all types of labour costs; a significant proportion of additional wages in the payroll

The study of the impact of personnel policy on the labour costs structure was carried out on the basis of the statistical reporting data of enterprises incorporated into the Bellegprom

Concern. The data are presented by industry in aggregated form, the observation periods are 2012 and 2016. The number of industrial organizations incorporated into the concern during the study period increased from 81 to 113 organizations.

The data on the labour costs structure of the Belleprom Concern organizations is presented in Table 2.

Table 2 – Labour costs structure of the Belleprom organizations in 2012 and 2016

Type of labour costs	Percentage in labour costs, %	
	2012	2016
Salary fund	70,76	70,99
The cost of providing workers with housing	0,33	0,28
Social protection expenditure	25,09	24,96
Professional development costs	0,09	0,07
Costs for cultural and community services	0,22	0,20
Other costs	1,63	2,01
Interest on bank loans for the payment of wages	0,48	0,53
Income from shares and other income from participation in property management	1,40	0,96
Total:	100	100

Source: according to the Belleprom concern

The data shows that the labour costs is dominated by expenses for wages and social protection of workers (96 % of the total), which are borne by all organizations. These costs are obligatory, they reflect the cost of labor use for the organization.

The proportion of housing costs, as well as cultural and commodity services for workers that affect long-term motivation is decreasing. The extremely low level of expenditure on employee training and development (less than 0.1 %), as well as its reduction should also be admitted. Such an attitude to training and personnel development indicates a lack of priority for staff development in personnel policy and exposes the organization's ability to survive in the long term in a competitive environment. The negative upward trend in the share of interest on bank loans for salary payments indicates a shortcoming in the financial condition of the organizations of the concern, and a decline in the percentage of income from shares indicates a decline in financial results.

The structure of labour costs of industrial organizations of the concern corresponds to



the labour costs structure in the industry of the Republic of Belarus [1, 2]. Such a structure corresponds to the industrial period of development of economic relations and indicates the passivity of the personnel policies of the Concern’s organizations.

It should also be taken into account that labour costs types, that are not obligatory for organizations, are funded not by all enterprises of the Concern (Figure 1).



Figure 1 – Share of industrial organizations that are financing expenses, % of the total number of organizations of the Belleghrom Concern, 2012 and 2016

Source: according to the Belleghrom Concern

The data shows that there is a need to revise personnel policy and change its priorities in favor of active measures to influence personnel, increase long-term staff motivation, increase investment in personnel in the organizations studied to ensure their long-term survival.

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## PROBLEMS OF MIGRATION SECURITY IN THE REPUBLIC OF BELARUS

## ПРОБЛЕМЫ МИГРАЦИОННОЙ БЕЗОПАСНОСТИ РЕСПУБЛИКИ БЕЛАРУСЬ

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### ABSTRACT

*EXTERNAL MIGRATION, LABOR FORCE,  
MIGRATION SECURITY, IMMIGRANTS,  
MIGRATION POTENTIAL*

*In the recent years the international labor migration has become an integral part of the modern world economy. The chapter concerns the trends of the international migration in Belarus as well as the peculiarities of the quantitative and qualitative structure of labor migrants.*

### АННОТАЦИЯ

*ВНЕШНЯЯ МИГРАЦИЯ, РАБОЧАЯ СИЛА, МИГРАЦИОННАЯ БЕЗОПАСНОСТЬ, ИММИГРАНТЫ, МИГРАЦИОННЫЙ ПОТЕНЦИАЛ*

*На современном этапе международная трудовая миграция стала неотъемлемой частью современной мировой экономики, выступая одним из главных факторов социальных преобразований как в странах-донорах, так и в принимающих странах. В статье*

*The analysis is based on the statistical data of the National Statistical Committee, the National Bank of Belarus, the Department of Economic and Social Affairs, Population Division of the United Nations.*

*рассматриваются тенденции международной миграции в Республике Беларусь, особенности количественной и качественной структуры трудовых мигрантов.*

*Основой для проведения анализа послужили статистические данные Национального статистического комитета и Национального банка Республики Беларусь, Министерства внутренних дел, а также Отдела народонаселения ООН.*

For more than 15 years the Republic of Belarus is living in depopulation: in the period between censuses (2000-2009) Belarusians decreased by 500 thousand people and since 2010 the population decline continues [1]. The main role in population reduction is played by natural decrease: from 1993 the number of deaths became more than number of births.

Experts consider that the depopulation problem in Belarus can be solved only by attracting migrants to the country. «In order to stabilize the population of Belarus, it is necessary to attract about 2 million immigrants together with children (that is more than 20 % of the population) till 2050 provided that from our country people won't emigrate» [2].

The international labor migration became one of the main factors of social transformations both in donor countries and in host countries.

One of the positive aspects of migration for the host country is the reduction in production costs as immigrant workers receive a considerably a smaller salary than local workers, and also lowering of costs for its preparation in a case of qualified labor. Positive aspects of international migration for donor countries is the fact that people working abroad acquire new professional skills, experience, knowledge in the labor process. On returning to their homeland they use them to increase the productivity of labor [3].

In addition, for donor countries labor migration is also an important source of currency inflow into the country.

Thus, external migration plays a key role in leveling the natural decline in the population of the republic; is a factor in the growth of the country's population, its reproduction and changes in the age structure as well as a source of labor force.

But there is a problem of optimizing internal and external migration flows in order to preserve the country's migration security.

There are 2 main components of the migration security:

- migration potential (the volumes of those who move and want to complete it);
- migratory behavior (causes and motivations that motivate people to make movements, their expectations of movement),

The analysis of the migration processes in the Republic of Belarus has shown that over a long period the Republic of Belarus appeared to be both a supplier of labor and the recipient throughout the analyzable period. Moreover, the numbers of coming labor migrants to Belarus was an insignificant till 2010. The reason for it was rather tough national labor legislation. Only since 2010 the flows of immigrants began to grow quickly that is closely connected with a new Law of the Republic of Belarus on «External Labor Migration» (came in to force in July 12, 2011). It defined the order of employment of the foreigners permanently living in the Republic of Belarus [3].

At the same time divergence of flows on entrance (import) and departure (export) of labor migrants is characteristic for Belarus. While the number of those who left the country for work stably exceeded the number of those who arrived till 2009, the situation changed radically since 2010. The analysis of the labor migrants flow under contracts showed that in 2010 the number of those who arrived exceeded the number of those who departed by 1750 people, in 2012 it exceeded by 2247 people, and in 2014 it already exceeded by 32 thousand people. This trend continues even now: according to the Department of Citizenship and Migration of the Ministry of Internal Affairs in the Republic of Belarus in 2016 the number of the arrived labor migrants was more than those gone abroad by 13.4 thousand people [4].

As a result, international labor migration is one of the key factors in the development of both the world economy and the economy of the Republic of Belarus. In this regard there is a question of accounting of external labor population shift of the country. The main objective factors that make this account difficult are the following:

1. The Union State of Belarus and Russia. For the external labor migration from Belarus, the existence of the Union State means that the border between the two countries is open, the rights of Belarusian citizens traveling to Russia are identical to those of Russian citizens, and for citizens of Belarus there is no need to obtain patents for work in a neighboring country and to fill the migration card.

2. The Eurasian Economic Union (EAEC). The international treaty establishing the EAEC provides for the freedom of goods, services, capital and labor movement.

3. Visa-free movement with 43 countries of the world according to all-civil passports of the Republic of Belarus.

All this reasons leads to the fact that the scale of external labor migration in Belarus is becoming difficult to determine. For example, according to the Federal Service for State Statistics of the Russian Federation, the number of labor migrants from Belarus involved in household work was 308,600 in 2014 and employed for performance of work by

businessmen – 33,0 thousand. But the Department for Citizenship and Migration of the Ministry of Internal Affairs of the Republic of Belarus gives other numbers – about 100 thousand people [5].

Thus, in the Republic of Belarus the registration of labor migrants who work on the basis of contracts is the only source of information about the number of migrant workers. It is conducted by statistical cards provided to the Citizenship and Migration Department of the Ministry of Internal Affairs of the Republic of Belarus by organizations that have licenses for work with migrants (as of November 1, 2017 there were 159 organizations in Belarus) [6]. However, the labor contract can be concluded both for a year, and for half a year, that is, one person can potentially change his place of work in the same country for the year. Therefore, the existing accounting reflects the number not of people, but number of border crossings by one person.

The structure of the migrant workers departing from Belarus is change for the last 5 years [5]. In 2011 about half of all number of immigrants consists of qualified employees and specialists (26 %), employees of the service and trade sector (25 %). The workers were only about 15 %.

In 2016 the situation is changed. The workers were more than 73 % of all number of immigrants, and qualified employees and specialists were less than 30 %.

The structure of emigrants arriving in the Republic of Belarus is not change significantly. About 5 % of all number of immigrants are managers, about 30 % are the qualified employees and specialists. And the workers consist of the more than 50 %.

The country distribution shows that for the period 2000-2016 the most attractive for the citizens of Belarus were Russia and the United States. The total share of these countries in the flow of labor migrants from Belarus was about 80 %. Total for the period 2000-2016 about 60 % of the Belarusian workers went to Russia, 21.6 % , 4,8 % – to UK , 3.3 % – to Poland, 2.2 % – to Germany.

The structure of the migrant workers arriving in Belarus (by countries) shows that for the period 2000-2016 the main countries from which the labor migrants entered were Ukraine (41.4% of the total), China (13.7 %), Russia (9.1 %), Lithuania (5,1 %), Turkey (5.1 %), Uzbekistan (4.9 %) [5].

The data of sociological surveys indicate a significant level of external migration potential in Belarus. On the one hand, the share of people who have no plans to go abroad decreased from 75 % to 64 %. On the other hand, if in 2010 about 6 % of the population wanted to leave for permanent residence, then in 2016 this figure was almost 11 %.

The survey data show that 60.0 % of male respondents and 70 % of women do not plan to go abroad for permanent residence. But among men, and among women observed an increase in the number of those wishing to leave Belarus for permanent residence [5].

Among respondents under the age of 30 about 20 % wishing to leave country for

permanent residence and 16 % – only for temporary work. At the same time among citizens at the age of 30-49 years the share of people who wishing to leave Belarus for permanent residence is 12 %.

The main reasons for living country for permanent residence are:

- I cannot secure a decent life here (43.8 %);
- I want to improve my financial situation (39.8 %).

The last one is the main reason for living country for temporary work too.

Generalizing the above, it can be concluded that the main factor in the formation of migration potential is economic. On the second place there is the factor of self-realization.

The main motives for realizing the migration potential of those wishing to go abroad are improving their financial situation, ensuring a decent future for their children, and professional self-fulfillment.

The greatest level of migration potential is possessed by respondents aged up to 29 years inclusive.

The male population has a greater level of migration potential than the female population.

In the Republic of Belarus both migration behavior and real external migration depend on changes in the socio-economic situation in the country: with a further worsening in the socio-economic situation in the country, the probability of losing a compensatory role of external migration.

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## FEATURES OF PROFESSIONAL COMPETENCE OF TECHNICAL STUDENTS

### ХАРАКТЕРИСТИКИ ПРОФЕССИОНАЛЬНЫХ КОМПЕТЕНЦИЙ СТУДЕНТОВ ТЕХНИЧЕСКИХ ВУЗОВ

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#### ABSTRACT

PROFESSIONAL  
PROFESSIONAL  
PROFESSIONALLY ORIENTED  
EDUCATION, INTERNATIONAL COOPERATION  
COMPETENCE,  
COMMUNICATION,  
LANGUAGE

#### АННОТАЦИЯ

ПРОФЕССИОНАЛЬНАЯ КОМПЕТЕНЦИЯ,  
ПРОФЕССИОНАЛЬНОЕ ОБЩЕНИЕ, ПРОФЕССИОНАЛЬНО-ОРИЕНТИРОВАННОЕ ЯЗЫКОВОЕ ОБРАЗОВАНИЕ, МЕЖДУНАРОДНОЕ СОТРУДНИЧЕСТВО

*The article deals with main kinds of professional competence. The role of foreign languages is the object of analysis: they are an integral part of professional activity of a specialist today; knowledge of foreign languages allows conducting research and building education process on a new higher level of international cooperation.*

*В статье рассматриваются основные виды профессиональной компетенции. Роль иностранных языков является объектом анализа: сегодня они являются неотъемлемой частью профессиональной деятельности специалиста; знание иностранных языков позволяет проводить исследования и строить процесс образования на новом более высоком уровне международного сотрудничества.*

The aim of the Belorussian educational policy of technical students is to improve the quality and accessibility of professional education. To date, training of specialist of any type should be considered in accordance with the rapidly changing conditions of competition, including international. Readiness of specialists to work in such an environment requires fluency in their profession, continuing education and professional development, social and occupational mobility.

In the transition to multi-level training of professionals there is the need to talk about improving the quality and effectiveness of training. This is especially important for future bachelor's and master's degrees in international relations in the sphere due to the nature of their professional activities, including communication processes in interpersonal, social, political, economic, cultural and international spheres.

At present, the issue of formation of professional competence in students is seen as a priority in the university training. When training technical students one of the main goals is to develop professional competence, especially through foreign language, and often several foreign languages.

Communicative competence usually is understood as ability to establish and maintain the necessary contacts with other people. The structure of competence includes a combination of knowledge, skills and abilities to ensure effective communication. This kind of competence involves the ability to vary the depth and range of communication partners in dialogue to understand and be understood by them. Communicative competence involves adaptability and freedom to own verbal and non-verbal means of communication and may be regarded as a category regulating the system of relations of person to himself or herself, the natural and social world. In the broadest sense competence of human communication can be defined as the competence in interpersonal perception, interpersonal communication and interpersonal interaction.

Professional competence of technical students is the ability to reach understanding with people of different cultures even with mediocre command of foreign languages on the basis of knowledge, understanding, and respect for universal rules and standards of conduct that make international communication etiquette. Professional competence allows an individual to establish relationships with people of other cultures – to recognize their cultural values, to tolerate the differences revealed in the manner of communication, styles of behavior, way of life, customs, traditions, etc.

Hence, successful professional cross-cultural communication of specialists in the field of international relations is an appropriate communicative behavior during the relationship of professional cooperation. It involves a high level of knowledge of foreign languages, and the ability to understand and accept the socio-cultural diversity of partners in dialogue to solve professional problems. The aim and the main feature of teaching cross-cultural communication is to educate students' communicative-oriented foreign language



proficiency in professionally significant situations of professional communication.

These features may include: the need to acquire necessary knowledge and skills through direct cultural contacts, the importance of foreign training and practices of future professionals, inviting foreign teachers and participation in international conferences, forums and projects.

When teaching cross-cultural communication in the process of learning a foreign language, one should take into account the so-called hidden difficulties of speech production and communication. They are due to original lexical and phraseological compatibility of each word in a specific language. Such specificity is evident when comparing languages. Therefore, when studying foreign languages it is important to memorize the words not in isolation, but in natural, stable combinations. Another difficulty is the conflict between cultural perceptions of different people about the reality, which is designated by equivalent words of the language.

You can talk about many features of professional competence training, including the study of foreign languages. To date they work out training manuals, workshops and techniques, the purpose of which is development of speech, language and cross-cultural competence of students. They are designed to facilitate the development of grammatically correct and logically meaningful speech, improve analytical reading skills, expand vocabulary skills, ability to discuss and write, and at the same time reflect the actual problems of modern life. They serve as the basis for a specific model of teaching future specialists of international relations.

Today's graduates of technical university will have to work in multicultural environment. One should be aware that the duality and differences in the interpretation of certain phenomena by students of different cultures is inevitability inherent in the structure of the modern world. Therefore, according to modern scholars and teachers it is more important to teach students how to skillfully use a variety of competencies instead of writing what is prohibited or allowed in a particular country.

Thus, it is important not only to know the principles of cross-cultural communication, but also to use and improve them in practice. So it is also useful and necessary to develop students' quick thinking and their ability to express ideas in different ways. An invaluable skill for a specialist in the field of cross-cultural communication is the ability to mediate between people, that is to represent the interlocutors to each other and talk correctly in a specific situation of communication. The process of cross-cultural communication makes high demands on the good command of the vocabulary and grammar skills. Fluent foreign language can only be achieved through integrated learning of all kinds of speech activity – speaking, listening, reading and writing.

As in many professional fields today, the training of technical specialists should be conducted in the context of continuing education, since only under this condition, it is

possible to master foreign languages and cross-cultural communication on a qualitative level.

A specialist who graduated from technical university today, of course, has to be a thoroughly educated person. World civilization dictates a number of requirements to the modern level of education and its fundamental nature. Talking about such an important profession of our time, as a specialist in the sphere of international relations, it must be emphasized that the professionalism of the graduates, possessing knowledge in the area of professional competence, is based not only on the fundamental and comprehensive training in the language, but also in broadening and deepening the role of the socio-cultural component in the development of communication skills.

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## **CRITERIA OF BALANCED DEVELOPMENT OF CONSUMER GOODS ENTERPRISES IN BELARUS**

## **КРИТЕРИИ СБАЛАНСИРОВАННОГО РАЗВИТИЯ ПРЕДПРИЯТИЙ ЛЕГКОЙ ПРОМЫШЛЕННОСТИ В БЕЛАРУСИ**

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### **ABSTRACT**

*CONSUMER GOODS INDUSTRY, VALUE ADDED, EXPORT, IMPORT, FOREIGN TRADE BALANCE, CRITERIA OF BALANCED GROWTH*

*Because of unfavorable external factors, present day economic and innovative development of Belarus makes the recovery of balanced economic growth of consumer goods industry be one of the main directions of the state economic policy. The aim of this study is to calculate*

### **АННОТАЦИЯ**

*ЛЕГКАЯ ПРОМЫШЛЕННОСТЬ, ДОБАВЛЕННАЯ СТОИМОСТЬ, ЭКСПОРТ, ИМПОРТ, БАЛАНС ВНЕШНЕЙ ТОРГОВЛИ, КРИТЕРИИ СБАЛАНСИРОВАННОГО РОСТА*

*В современных условиях экономического и инновационного развития Беларуси, вследствие воздействия неблагоприятных внешних факторов, восстановление сбалансированного экономического роста легкой промыш-*

*synthetic indicators (added value, interbranch consumption, exports and import of goods and services), compare them with other industries, identify growth drivers in light industry operations in order to find solutions that provide for balanced development of enterprises. The research method is based on the analysis of light industry condition using the interbranch balance method.*

*ленности является одним из главных направлений экономической политики государства. Цель настоящего исследования заключается в том, чтобы на основании межотраслевого анализа легкой промышленности с применением межотраслевого баланса рассчитать синтетические показатели (добавленная стоимость, промежуточное потребление, экспорт и импорт товаров и услуг), сопоставить полученные показатели с другими отраслями экономики, выявить факторы роста в деятельности легкой промышленности для поиска решений, позволяющих обеспечить сбалансированность развития организаций.*

The term «balance» is usually associated with the categories «sustainability», «stability» and «equilibrium». In economic theory, the concept of «balance» is associated with economic growth. In their work [1, p. 93] the collective of scientists define the term «balance» as «the state of the system, in which the basic proportions and ratios between its elements are maintained while ensuring sustainable economic growth». In our opinion, the balanced development is to be considered as the dynamic nature of existence of the economic system and a process characterized by sustainable, qualitative economic growth, focusing on the optimal ratio of indicators on the resource use efficiency.

Despite the existing disagreements among the authors on the classification of factors, factors of the external and internal environment of the organization are of the top importance. According to the author, the balance of payments, which reflects all the existing problems of the country's economic development, is a key external factor for the balanced development. Its unsustainable position requires the application of a number of macroeconomic policy measures, including monetary policy, influencing the balance of payments through interest rates and the dynamics of the real exchange rate. Production can be identified as an internal key factor, in which the main resources are concentrated in creating value added, expressing the value of the final socio-economic result in the scale of the organization.

Light industry (production of textiles, clothing, leather and fur products (CB subsection) in accordance with National Classifier of Economic Activity (OKRB 005-2011) «Types of

economic activity») is one of the most important industrial sectors of Belarus, designed to provide the population of the country with high quality goods in a wide range at reasonable prices. The results of the CB subsection status for 2011-2016 indicate the unsustainability of the development of organizations. The specific structure in the industry remains: textile and clothing production accounts for 80 % of industrial output. The share of products of the CB subsection in the total volume of industrial production for the study period averaged 3.8 % [2, p. 75].

In our opinion, regional cooperation in production value chains, gross savings, consumer demand and other instruments, government support measures can serve as drivers of balanced growth in light industry. The first growth driver is regional (international) cooperation in product value chains. One of the reserves for light industry goods and services output growth may be the participation of domestic enterprises in the Eurasian production chains. In addition, the last experience of incorporating light industry enterprises into regional supply chains in the country took place on give-and-take basis in the last decade of the twentieth century. The second growth driver is gross savings. The potential of using foreign direct investment (FDI) as an external source of growth is not fully applied and can become the basis for the development and creation of new industries in the coming years. It is necessary to develop appropriate instruments that encourage foreign investors to invest in light industry, guarantee their sustainability, predictability of business and protection of rights. The third growth driver is consumer demand. The dynamics of demand in the consumer market depends on the income level of the population and their purchasing power. According to the economy basic law «a balanced economy implies that consumption growth must be linked to production growth, and wages shall not outpace growth in labor productivity». In light industry, it is necessary to step up such a tool as, for example, consumer lending for stimulating consumer demand. It is important that the revitalization of consumer lending is to be aimed at targeted support for the purchasing of goods with low import intensity. It is necessary to stimulate the sale of domestic products, but they should not be inferior in quality to imported goods. Companies in the industry will need to more actively develop their trade and strategies to ensure growth in net exports.

Thus, for light industry a structural policy is needed to stimulate the growth of exports of high value-added goods and services and reduce the growth of consumer imports. To do this, it is advisable to use a wide range of tools: introduction of tax preferences, low interest rates, overcoming administrative barriers, encouraging the initiative and enterprise of management, as well as high-quality modern marketing. The growth drivers and tools formulated above represent a strategic vector for the further development of Belarusian light industry in today's competitive environment.

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## HUMAN RESOURCE MANAGEMENT CHALLENGES IN THE 21st CENTURY

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### ABSTRACT

*HUMAN RESOURCE MANAGEMENT, LEBANON, TALENT SELECTION, RECRUITMENT AND HIRING, TALENT MANAGEMENT, EMPLOYEE RETENTION*

*This article discusses the HRM challenges in the 21st century with a focus on Lebanon. HRM department is indispensable because it influences both short and long-term organizational performance. Three challenges have been identified in this article, including the selection of the right talent, talent management, and employee retention. The article recommends the adoption of technology to facilitate talent selection processes, development of reward and compensation systems to improve retention and adoption of organizational learning to solve the challenge of talent management.*

### INTRODUCTION

Human Resource Management (HRM) department is a vital organ of any organization in the contemporary business environment. In the 21st century, companies require a formidable set of skills to survive and compete with other players. Nevertheless, HRM is experiencing major challenges emanating from both internal and external factors. Human capital should be equipped with pertinent technologies and techniques to overcome the challenges of the 21st century. There are many demands on companies in the contemporary environment such as competition, globalization, technological advancements, and shifts in working methods. As a result, companies have a huge pressure and HR is mainly under pressure to perform critical roles that enable the company to move towards the achievement of its mission.

Currently, HRM is experiencing tremendous changes since there is a shift in HR managers' roles from handling personnel issues to designing and implementing strategies for their companies. The managers are increasingly facing the challenge of ensuring the organization has the right talent to help in the achievement of goals. Indeed, some companies have less qualified employees due to this challenge. The issue of talent development is also emerging as an important challenge for HRM in this century. Unlike in the past years, HR is increasingly expected to nurture and develop talent. Employee retention is another challenge of HRM in Lebanon. The challenge of getting the right employees will be discussed in the first section of this article. In the second section, the article will discuss the problem of talent development in Lebanon. Employee retention challenge will be discussed in the third section. In the last section, the article offers recommendations that can assist HRM to address the 21st challenges.

#### SELECTING THE RIGHT TALENT

The selection of the right talent is among the most important challenges of the HRM in the 21st century. In the past few years, hiring and recruiting the right people were not a key challenge for the HR because there was a small pool of talent. However, HR professionals have to deal with the challenge of selecting employees from an expanding pool of brilliant and marginal employees (Zaraket & Halawi, 2017). Besides, there is an increasing pressure of choosing temporary and permanent employees in the current century. The irony is that the talented highly-skilled workers are progressively entering the labor market annually. In this case, the HR might be unable to scan multiple applicants and still choose people who will help the organization to achieve its short and long-term goals.

Although new job candidates are being released into the market continuously, the supply of talent in Lebanon is still limited. For instance, there is a limited supply of human resource for health across Lebanon (Alameddine, Khodr, Mourad, Yassoub & Abi Ramia, 2016). Further, Alameddine et al. (2016) assert that a large percent of general practitioners in Lebanon are graduates from medical schools with no specialization. There is also a scarcity of nursing workforce across the country since some of the highly qualified nurses work abroad. A study by El-Jardali, Tchanghchagian, and Jamal (2009), shows that the lack of qualified personnel is an essential challenge for the HR in Lebanon. In fact, respondents in this study argue that there are a few candidates for different positions such as safety officers and quality managers in their healthcare institutions (El-Jardali et al., 2009). As such, the ability of the healthcare system to offer quality care to patients is crippled. In terms of the supply of job candidates, there is also the lack of person/job fit in Lebanon (El-Jardali et al., 2009). The HR in medical fields may be unable to select the right talent for their organizations due to these challenges.

Indeed, the quality of the hired workers relies on the effectiveness of the recruitment

and selection processes. The HR might experience various obstacles in the process of selecting employees such as the costs of advertising job vacancies and communication gaps (Nasir, 2017). Another issue that complicates the process of selecting the right talent is biasness (Nasir, 2017). Most experienced HR professionals are influenced by their beliefs, social views, and values when selecting employees, meaning that there is a possibility of biasness.

In this regard, Yahchouchi and Salloum (2015) argue that gender stereotype tends to affect employment decisions in Lebanon. Recruitment Decision Maker (RDM) impacts the hiring decisions when selecting between job applicants of different genders (Yahchouchi & Salloum, 2015). In Lebanon, there are stereotyping attitudes toward kinds of employment whereby men are perceived as more suitable for particular job profiles. As a result, male candidates tend to secure more prestigious jobs than female candidates. In relation to the selection of talent, gender stereotyping might prevent a company from hiring the right person because of his or her gender. For instance, a research involving a population sample of 52 respondents in Lebanon shows that 72 percent of the participants choose men applicants for the position of financial manager and 74 percent select women applicants for the HR position (Yahchouchi & Salloum, 2015). Notably, a less qualified person might be chosen for a certain position because they are perceived as suitable based on their gender.

Some hiring and recruitment methods might be detrimental in selecting the best candidates. Research indicates that a substantial number of Lebanese banks practice internal recruitment (Afiouni, 2007). Employees entering the job from external sources tend to have more education and experience than those hired through internal methods (Bidwell, 2011). Hence, internal recruitment and hiring might allow a firm to get the best talent, however has been shown to be less disadvantageous.

#### TALENT MANAGEMENT

Talent management is focused on recruiting and improving the top skilled and brilliant employees in the company. Importantly, talent management can also be perceived as human capital management and it entails viewing and treating employees as an asset (Aslam, H., Aslam, M., Ali & Habib, 2013). Chiefly, talent management is a challenge in the 21st century because human capital is not integrated into the business strategy. Talent management is a growing challenge for many Lebanese companies. Most companies are struggling to link their human capital to the business strategy and there is also the lack of ability and accountability for talent development, which worsens the issue of employee development (Hejase, Eid, Hamdar & Haddad, 2012). One research done on 10 Lebanese banks found that HR managers are included as strategic players in strategy development (Afiouni, 2007). Apart from being involved, HR managers in the banking industry think that their departments do not have an impact on strategy formulation.

In Lebanon, only a few organizations have embraced the concept of talent management, although most managers are aware of its benefits. One study involving respondents from service companies, the banking industry, retail sector and non-profit organizations found that approximately 33 % of companies in Lebanon do not have talent management initiatives (Hejase, H., Hejase, A., Mikdashi & Bazeih, 2016). Fundamentally, training in a number of banks in Lebanon is unplanned meaning that training workers are randomly selected for advancement opportunities (Afiouni, 2007). In these banks, career paths often exist at the managerial levels or at all levels across the bank, which affect future talent development.

In this case, non-profit organization and the banking sector are more likely to have a formal talent management plan than the other industries (Hejase, et al., 2016). The results also indicated that many organizations lack formal succession plans regardless of their orientation, whether local or international. These companies will likely have a bigger challenge in the future in regard to talent management because of the growing turnover rates as well as the war of talent among companies mainly in the banking, IT and telecom industries.

Many companies do not offer the essential tools required to improve and develop talent, such as workforce planning, recruiting, training and development, retention etc... Furthermore, companies fail to provide employees with the pertinent support and incentives to achieve success, although such companies conduct a performance appraisal and provide career development plans. The lack of pertinent skills among the HR professionals is another factor that impacts talent development. About 56.7 percent of respondents in a research on HRM challenges in Lebanese hospitals assert that they require training in certain HR skills to assist them in their role of career development (El-Jardali et al., 2009). One study involving 10 Lebanese banks found that the HR managers in five banks do not have an academic background in HRM and even lacks professional experience in the HRM field (Afiouni, 2007). As such, these five banks do not have career paths for workers and compensation is not aligned with performance (Afiouni, 2007). Hence, the lack of sufficient skills among the HR professionals tends to negatively influence employees' management initiatives.

There is also a gap in «Total Talent Acquisition» in most Lebanese organizations. In this context, Total Talent Acquisition refers to the process of viewing and treating all people working for the organization as talent and improving their skills to achieve high performance (Hejase et al., 2012). The gap in Total Talent Acquisition implies that most Lebanese companies have not identified the real talent of their employees. All employees, including internal workers, external employees who work on a full-time basis, contingent employees, offshore labor should be considered as important talent pools of an organization (Hejase, et al., 2012). Most organizations do not have Total Talent Acquisition plans leading to poor talent management programs.



The nature of the workplace environment in Lebanon tends to inhibit talent development in most organizations. Jamali and Sidani (2008) found that Lebanese companies have not made deliberate efforts to align their reward systems with learning. In many cases, workers are not given rewards for taking place in learning activities, acquiring new skills or seeking to increase their knowledge on a certain subject (Jamali & Sidani, 2008). Nevertheless, this association between learning and reward might undermine learning processes. A different dimension is that reward systems and structures are critical because they tend to increase motivation, which shapes workers' learning orientation (Jamali & Sidani, 2008). Many employees tend to adopt learning initiatives if they are promised a reward and this aspect is essential in talent management.

Research further indicates that Lebanese companies tend to prioritize the development of current competencies rather than developing long-term oriented talents. Based on the research done by Jamali and Sidani (2008), the issues of constant experimentation and continuous learning got the lowest rating in Lebanese organizations. These issues are essential because they allow firms to integrate knowledge into actionable learning systems and make sure that learning is promoted on an ongoing basis. Ideally, experimentation thrives where there is a supportive learning environment.

In case experimentation is not promoted, a supportive learning environment might drive and facilitate an organization's learning initiative (Jamali & Sidani, 2008). Indeed, experimentation opportunities are generally missing in Lebanese companies and this is characterized by the lack of opportunities for pursuing new ideas, questioning and experimenting with alternative assumptions (Jamali & Sidani, 2008). On the contrary, the Lebanese environment does not value systematic worker development by allowing for the advancement of distinctive competencies. Only the educational interventions that are essential to supplement skills acquisition and usage are given attention in Lebanese organizations (Jamali & Sidani, 2008). Essentially, a large number of Lebanese firms do not create opportunities for talent development.

#### EMPLOYEE RETENTION

Most organizations in Lebanon are experiencing the challenge of employee retention. Retaining skilled employees is an essential practice because it builds the organization's labor force, increases performance and prepares the organization for future challenges in the market. Recent research shows Lebanese companies do not have initiatives to retain highly qualified talent leading to high employee turnover. In fact, El-Jardali et al. (2009) found that poor employee retention is the biggest HRM challenge in Lebanese hospitals. Based on their research, 56.7 percent of the respondents said that poor employee retention is affecting nearly all healthcare institutions across the country. Employee retention strategies are often used in combination with performance appraisal. El-Jardali et al.

(2009) assert that 77.3 percent of hospitals perform annual performance evaluation for all workers. Nevertheless, performing performance appraisal is a requirement in Lebanese hospital accreditation programs; thus, most hospitals do not acknowledge its significance for the workers. Even though a substantial number of hospitals do not conduct performance appraisal, certain employees are appraised as needed. These workers include medical staff, technicians, specific nurses and heads of departments across the hospital (El-Jardali et al., 2009). Therefore, there are major gaps that affect employee retention efforts in most organizations.

Employee retention is becoming a challenge in the 21st century because many companies do not have practical retention strategies. According to Hejase et al. (2016), approximately 47 percent of the respondents indicate that their companies do not have formal budgets for retaining workers. The most affected organizations are those that operate in the service industry as well as non-profit organizations. Ideally, this issue reflects the fact that the service industry, specifically depends on soft skills of workers and not technical skills; thus, investing in soft skills as well as customer care training is cheaper compared to technical training done by IT and telecom companies (Hejase et al., 2016). In this case, it is notable that the service industry is reluctant to invest resources in creating retention initiatives. In the study conducted by El-Jardali et al. (2009) only 26.8 percent of the participants said that their healthcare institution has a retention strategy. However, their study notes that many people might be unaware of the availability of employee retention strategies in Lebanese healthcare institutions.

Unsatisfactory work environment tends to increase employee turnover rate across all industries. Currently, retaining the best employees has become a key challenge in HRM because of poor work environment and conditions. A recent study involving nursing directors in 76 healthcare organizations in Lebanon found that unsatisfactory salary and working hours are major retention challenges (El-Jardali, Merhi, Jamal, Dumit & Mouro, 2009). Employees are likely to quit or shift to competitors if they are subjected to low salaries and benefits. For instance, studies show that about 80.8 percent of nurses in Lebanon are likely to quit because of poor pay (El-Jardali, 2009). Scheduling and working hours tend to present a challenge in retention in the healthcare sector. The clinical workforce may be exposed to long working hours or unpredictable shifts due to the shortage of certain professionals. In this case, the healthcare professionals are likely to quit, which increases turnover rates in the long-term. In fact, 27.4 percent of the nursing directors indicate that nurses are likely to leave because of heavy workload (El-Jardali, 2009). Thus, that better opportunities and heavy workloads are important retention challenges.

## CONCLUSION

This overview highlights three challenges in the 21st century with a focus on Lebanon.

The challenge of getting the right employees, the problem of talent development and employee retention. HRM in Lebanon is experiencing intricate challenges that can be solved systematically. Most organizations are facing major challenges in selecting the appropriate employees, regardless of their recruitment and hiring process. Although employment processes might prevent organizations from getting the right talent, the Lebanon context tends to affect hiring processes because of a low supply of qualified talent. Furthermore, many organizations are still unable to develop their talent because of the nature of the work environment, lack of resources and strategic policies. As such, the challenge of employee retention has emerged. Lebanese companies tend to experience high turnover rates because employees are not motivated. Essentially, HRM in Lebanon should restructure its strategies to counter the emerging challenges in the 21st century.

#### RECOMMENDATION

The focus on Lebanon implies that HRM practices should be improved to allow for the selection of the best talent, allow for talent development and enhance retention rates. In this case, effective screening processes should be utilized to ensure the right employees are brought on board to assist the organization in realizing its mission. Technologies including social media have been adopted successfully in HRM functions such as recruitment and selection (El Ouiridi, El Ouiridi, Segers & Pais, 2016). Hence, hiring processes should be automated through technology to solve the challenge of selecting suitable job candidates. Organizations can adopt both intrinsic and extrinsic motivators to solve the challenge of employee retention in Lebanon. Notably, employee retention can be improved by involving employees in decision making and policy implementation.

The creation of practical systems for compensating and rewarding employees can also help to address the issue of employee retention. Workers should be rewarded based on the results of annual performance reviews (Zaraket & Halawi, 2017). Good performance should often be rewarded to keep employees in the organization. Besides, Lebanese companies should create clear career paths for employees to ensure there is an ongoing talent management. Companies should continuously support their employees to improve productivity and contribute to the achievement of the company goals (Aslam, H. et al., 2013). Implementation of organizational learning, which entails the detection and correction of errors, can help Lebanese organizations to deal with the challenge of talent development. In essence, HRM should be proactive to ensure the 21st challenges are addressed.

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## **INTEGRATING SOCIAL RESPONSIBILITY INTO BUSINESS STRATEGY AND ORGANIZATION'S CULTURE (THEORETICAL ASPECTS)**

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### **ABSTRACT**

*CORPORATE SOCIETAL RESPONSIBILITY, SUSTAINABLE DEVELOPMENT, BUSINESS STRATEGY, ORGANIZATIONAL CULTURE*

*The main concepts of corporate social responsibility and different definitions of social responsibility are considered. The Concept of sustainable development are clarified. Definition and practices of corporate social responsibility are shown and the ways of implementing the CSR into business-strategy and corporate culture.*

The concept of corporate societal responsibility (CSR) is an integral part of the statement of Sustainable development. It characterizes the function of organizations in the fight against risks at the ethical, social, environmental and economic level (Goy, 2015). According to the European Commission, The Corporate social responsibility is the concept that indicates the voluntary participation by companies of social and environmental concerns in their business activities with their stakeholders. And, according to the World Business Council for Development, it defines it as «The commitment of companies to adopt ethical behaviors and to contribute to the Economic development, while improving the quality of life of employees, their families as well as the local community and society as a whole». As per Jones (1980), explains it as being «The idea that companies beyond legal or contractual requirements have an obligation to societal actors». Based on these definitions, the following arguments are noted:

- some companies believe that social responsibility is associated with ethics or charitable actions, and some others attach it, to legal responsibility or to social conscience;
- companies voluntarily choose to commit to societal responsibility;
- this responsibility results from the positive consequences on the society itself and on others;
- it generates an additional cost to companies that practice it;
- it is the participation of societies in sustainable development. The latter notion indicates that the company is confronted with unlimited liability at the environmental, economic and social level.

Before the company implements social responsibility, it is important that it perceives its environment in a suitable way. This can be done by evaluating the skills leading to change for third party integration, by characterizing global issues and their regulatory and political implications; knowing the managerial and technical solutions that contribute to the progress of social, health and environmental processes within societies (Rose j.j., & Lepine F., 2010) .

ISO 26000, published on 1 November 2010, clarifies the integration of standards of societal responsibility, governance and ethics in a broader manner. It is not a corrective standard, but a guide to guidelines for companies and organizations. The final draft of this standard was approved by a large majority (93 %) by ISO member countries and organizations (the United States, Cuba, India, Luxembourg and Turkey voted against). It defines societal responsibility as «responsibility of an organization for the impacts of its decisions and activities on society and the Environment, translating itself as a transparent and ethical behavior that contributes to Sustainable development including the health and well-being of society, and it takes into account the expectations of the stakeholders while respecting the laws in force and is COMPATIBLE with international standards».

So, the SCR-concept includes three dimensions of social responsibility and the Sustainable development - social, economic development and protect the environment by preserving natural resources. It is divided into three parts that are assembled and attached:

- sustainable ' economic ' development: It is designed to create efficiency and economic development.
- sustainable ' social ' development: It aims to meet human needs and achieve social coherence and justice goals between people (by objection to inequality and discrimination). It contains in addition the questions of consumption, education, health, housing, culture, employment.
- sustainable 'environmental' development: It points to the protection of the ecological system as well as the development of natural resources and the environment in the long term. (Word Press, 2010).

To achieve these three dimensions, corporate social responsibility must be based on sustainable development in:

- applying and respecting the rules of good governance such as responsibility, mutual assistance, prudence, and impartiality.
- bringing the optimum between the viable, the equitable and the livable.
- taking into consideration all the present and future generations, and this, by refraining from compromising the development of future generations and giving them the right to enjoy a healthy environment.

The equation of sustainable development is therefore: sustainable = viable + equitable + livable. Through social responsibility, the company supports sustainable development

with the goal of executing today while retaining resources for future generations. It can position the company on one or more of the following items (Capron, M., 2010):

- the social: satisfaction of the primary and essential needs of individuals. It is necessary to distinguish between external social such as sponsorship, service to employees... and internal social such as working conditions, remuneration policy;
- the economy: certifying sustainable development in the long term by taking into account the quality of international economic relations and the assimilation of the costs generated by social and environmental acts. As an example: shareholder relations, customers, suppliers, corporate ethics, and governance;
- the environment: conservation of natural resources, energy savings recycling, renewable energies.

The purpose of integrating social responsibility into the company's strategy and culture is very actual and important. The socially responsible organization must ensure the work aspects integrated into the strategy so that the latter are socially and economically responsible (Mansour, 2011). Noting that this is one of the most difficult tasks for the company to accomplish. «Very few companies would be able to integrate CSR into their strategy, (Piercy N., Lane N., 2011). Indeed, there are four kinds of strategies that can be assimilated by organizations according to the inherent steps of the application of social responsibility in the enterprise:

- adversity against societal responsibility and its advocates: the company must respect social values and the law, this need resembles the notion of social responsibility;
- donations: the organization makes donations to certain projects that are not directly related to its operation. So this kind of activity judged by the company as related to social responsibility would rather be an additional burden;
- the company's challenge to external pressures or problems seeks to take socially responsible measures even if they are not related to its activities, in order to reduce the environmental and social risks threatening the organization;
- proactive attitude: the company takes care of applications that correspond to social and environmental principles, so that they become interdependent. This integration of socially responsible values into the activities of society from where its strategy is genuine and sincere. Thus, they provide the organization with a competitive advantage that would surpass the expectations of the customers and affect them through its actions. The company can therefore invest in its capacity to improve its competitiveness. This is the standard strategy for completing corporate social responsibility. «The company that wants to become responsible socially must integrate the social actions it undertakes in its strategy and show a differentiation in relation to others» (D. Rogovsky N. Dunfee T.W. 2002).

Finally, even if the company supports an additional cost by carrying out social responsibility activities, it will avoid one of the enormous risks, at internal or external level,

which Would Important consequences on it.

The problem of integrating of SCR into organization s culture must consider a first definition of culture to better explain the notion of corporate culture. «The business carries in itself an invisible quality, a certain style, a character, a way of doing things that can be more powerful than the will of such a person or official system» (Helliege D., Slocum R.N., Woodman R.W. 1993). Another definition on this topic: «Every company has its own way of doing business called» corporate culture" "(Mercier S. 2004). The culture of society is related to its behavior, whether it is ethical or not. It evolves according to the environmental changes. It turns out that it is influenced by the culture of the country where the company is located and that it depends on the societal relations established by the countries. By way of example: the countries of the South retain a mindset directed towards Community actions while Western countries support their population by developing community conduits. The company can describe its culture through a charter or any other type of statement, and this helps to lead the attitudes of employees . The application of culture differs from a society to one and sometimes it must be ethical as in the banking sector. Moreover, social responsibility is confused with the culture of the company when the latter practice socially responsible activities (Mansour, 2013).

So, the Corporate Social Responsibility today adopts a balanced approach to economic, environmental and social issues in order to benefit citizens, communities and society as a whole, beyond the simple compliance with the law. It is applied in a voluntary manner and the results of these public activities maintain accountability. Societal responsibility creates an extensive field of study, specifically when it is evaluated in terms of customer sensations. For this, the Director of the Organization must be responsible for engaging third parties among them consumers of the orientations carried out on social responsibility and its consequence on sustainable development, which helps the society to exceed the simple business connection with its customers. This forms an important issue between the organization, the purchasing decisions of the customers and their perceptions.

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## THE PARTICULARITIES OF LEARNING TECHNIQUES IN THE PROCESS OF READING

## ОСОБЕННОСТИ МЕТОДОВ ОБУЧЕНИЯ В ПРОЦЕССЕ ЧТЕНИЯ

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### ABSTRACT

*INTERACTIVE PROCESS, COMMUNICATIVE METHOD, INNOVATIVE METHODS, LEARNING TECHNIQUES, VOCABULARY, DEDUCTIVE APPROACH*

*The article deals with the particularities of learning techniques in the process of reading in order to create foreign language communicative competence. As the process*

### Аннотация

*ИНТЕРАКТИВНЫЙ ПРОЦЕСС, КОММУНИКАТИВНЫЙ МЕТОД, ИННОВАЦИОННЫЕ МЕТОДЫ, МЕТОДЫ ОБУЧЕНИЯ, СЛОВАРЬ, ДЕДУКТИВНЫЙ ПОДХОД*

*В статье рассматриваются особенности методов обучения в процессе чтения для создания коммуникативной компетенции. Поскольку процесс обу-*

*of students' foreign language learning should provide not only the acquirement of some certain level of knowledge, but also promote the successful implementation of educational and developing potential of academic subject.*

*чения иностранному языку студентов должен обеспечивать не только приобретение определенного уровня знаний, но и содействие успешной реализации образовательного и развивающего потенциала академического предмета.*

With the development of the communicative method in language teaching the role of vocabulary as well as of reading is on the increase. Words are essential and the lack of them leads to feeling insecurity. There is a strong connection between knowing a word and the ability to recognize it while reading or listening and using it when speaking. Teaching vocabulary is more than just presenting words and their individual meanings in isolation. As the teaching experience shows, students make mistakes if they learn the meanings of words without learning how to put words together in a sentence.

There are three possible ways in which vocabulary teaching can fit into a language learning process. Most courses make use of all the three but the amount of time allocated to each of these ways depends on the teacher's understanding of how language is best learned. The first case is when language-learning materials are prepared with vocabulary learning as consideration. The most common examples of these are the preparation of simplified material and the careful vocabulary grading of the first lessons of English. The second case describes the situation when words are dealt with as they happen to occur. If an unknown word appears in a reading passage, the teacher pays some attention to it at the moment it causes a problem. And the third case is when vocabulary is taught in connection with other language activities. For example, the vocabulary of a reading passage is dealt with before the students read the passage.

Vocabulary can be taught with the help of the inductive and deductive approaches. The inductive approach presupposes that the examples of particular meanings are given first and then the concept is described. The process is called inductive because the examples lead the students into the concept. The choice between the inductive and deductive approaches to teaching meaning depends on which approach will suit a particular word and where the teacher wants to direct the students' attention. Some words are difficult to define satisfactorily, so the inductive approach is the most suitable. The deductive approach communicates the meaning quickly and allows the teacher to arrange controlled practice for collocations of the word. In addition, the students can have an opportunity to test their knowledge by suggesting their own examples.

Though different ways of presenting vocabulary exist, the most effective one is through reading because it presupposes the use of discovery techniques. They are aimed at the development of language guess, communicative abilities, self-monitoring rather than the

use of translatory methods. When students interact with texts, their reading comprehension improves. Hence, they become critical readers.

Texts are useful for focusing on specific words for active study. Extensive reading provides the opportunity to meet words in their context of use and also supplies repeated encounters with many of these words. Ideally students should have the opportunity to choose the kinds of texts they are going to read. Narrow reading is reading around the same topic over the course of a number of texts. In this way learners become more familiar with the topic, which in turn makes reading easier and students come across the same vocabulary used repeatedly.

When considering what to do about the unknown vocabulary in a reading text, the teacher needs to decide what the purpose of the class is. If the purpose of the class is to develop reading skills or to master the content of a reading text, then vocabulary work should be speedy and brief so that the students are not distracted from the purpose of the class. If the purpose of the class is to develop learners' reading vocabulary, then the teacher can afford to spend some time on particular vocabulary and on vocabulary learning strategies.

Good readers use what they know about language and the world to interact with what they are reading. This helps them create meaning from the words. Activities that encourage interaction with texts, like direct activities related to texts improve students' reading comprehension and make them critical readers. They can be done by individual students or in groups. They can be divided into two groups: reconstruction activities and analysis activities.

Reconstruction activities require students to reconstruct a text or diagram by filling in missing words, phrases or sentences, or be sequencing text that has been jumbled. For example, text completion (Fill in missing words or phrases), sequencing (Arrange the jumbled segments of the text in a logical or time sequence), grouping (Group segments of the text according to categories), table completion (Fill in the cells of the table that has row and column headings, or provide row and column headings where the cells have already been filled in), diagram completion (Complete an unfinished diagram), prediction activities (Write the next step or stage of a text, or end the text).

Analysis activities require students to find and categorize information by marking or labeling a text. For example, text marking (Find and underline parts of the text that have a particular meaning or contain particular information), text segmenting and labeling (Break the text into meaningful chunks and label each chunk), questioning (Answer the teacher's questions or develop questions about the text), summarizing.

The texts can be based on extracts from magazines, newspapers, passages from history, geography, science, and textbooks.

Experience in vocabulary teaching suggest that students remember best when they have

actually done something with the words they are learning. There is a definite advantage in getting students to do more than just repeat them. Tasks such as changing them to mean their opposites, making a noun an adjective, putting words together help to fix the words in the learners' mind.

Teaching vocabulary is more than just presenting new words. This may have its place but there are other issues too. For example, students see a lot of words in the course of the week. Some of them are used straight away, others are not. When teaching words we take into account some points such as active or passive vocabulary, interaction with words and discovery techniques.

The problem of vocabulary acquisition should be systematically addressed by both teachers and students. Increasing learners' vocabulary without paying attention to putting this knowledge to use may not be effective. Research on readability stresses the importance of vocabulary knowledge in reading.

UDC 316.4

## CAUSAL-COMPARATIVE RESEARCH PECULIARITIES IN SOCIALIZATION

### ОСОБЕННОСТИ СРАВНИТЕЛЬНОГО ИССЛЕДОВАНИЯ (НА ПРИМЕРЕ ПРОЦЕССА СОЦИАЛИЗАЦИИ)

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#### ABSTRACT

CAUSAL-COMPARATIVE RESEARCH, SOCIALIZATION, SCIENTIFIC METHOD, DESCRIPTIVE STUDIES, PUBLIC ACCUMULATION OF KNOWLEDGE, ANALYSIS, INSTRUMENTATION, PROBLEM FORMULATION, SAMPLE

#### АННОТАЦИЯ

СРАВНИТЕЛЬНОЕ ИССЛЕДОВАНИЕ, НАУЧНАЯ МЕТОДОЛОГИЯ, СОЦИАЛИЗАЦИЯ, НАУЧНЫЙ МЕТОД, ОПИСАТЕЛЬНОЕ ИССЛЕДОВАНИЕ, АНАЛИЗ, ИНСТРУМЕНТАРИЙ

*Our report deals with the process of a comparative study in the field of socialization of students. It is presented an overview of pedagogical research: steps*

*В нашей статье рассматривается процесс выполнения сравнительного исследования в области социализации учащейся и студенческой молодежи. В*

*involved in causal-comparative research. We made an attempt to explain the purpose of the analysis in a comparative study of the problem. Thus, having examined the pedagogical research and its types, we can say that the causal-comparative type of research is intended to determine the cause for or the consequences of differences between groups of people.*

*нем дается обзор сущности педагогического исследования: представлены способы получения знаний, объясняется необходимость постановки проблемы научного исследования, описываются этапы проведения сравнительного исследования. Таким образом, рассмотрев сущность педагогического исследования и его типы, можно сказать, что в зависимости от цели, предмета, объекта научного исследования, мы используем соответствующий тип изучения.*

Causal-comparative research attempts to determine the cause or consequences of differences that already exist between or among groups of individuals. As a result, it is sometimes viewed, along with correlational research, as a form of associational research, since both describe conditions that already exist. A researcher might observe, for example, that two groups of individuals differ on some variable (such as teaching style) and then attempt to determine the reason for, or the results of, this difference. The difference between the groups, however, has already occurred. Since both the effects and the alleged causes have already occurred, and hence are studied in retrospect, causal-comparative research is also referred to sometimes as *ex post facto* (from the Latin for «after the fact») research. This is in contrast to an experimental study, where a researcher creates a difference between or among groups and then compares their performance (on one or more dependent variables) to determine the effects of the created difference.

How can educators, parents, and students obtain the information they need? Many ways of obtaining information, of course, exist. One can consult experts, review books and articles, question or observe colleagues with relevant experience, examine one's own experience in the past, or even rely on intuition. All these approaches suggest possible ways to proceed, but the answers they provide are not always reliable. Experts may be mistaken; source documents may contain no insights of value; colleagues may have no experience in the matter; one's own experience or intuition may be irrelevant or mistaken.

Steps Involved in Causal-Comparative Research. **Problem formulation.** The first step in formulating a problem in causal-comparative research is usually to identify and define the particular phenomena of interest and then to consider possible causes for, or consequences of, these phenomena. Suppose, for example, that a researcher is interested in student creativity. What causes creativity? Why are a few students highly creative while

most are not? Why do some students who initially appear to be creative seem to lose this characteristic? Why do others who at one time are not creative later become so? And so forth.

**Sample.** Once the researcher has formulated the problem statement (and hypotheses, if any) the next step is to select the sample of individuals to be studied. The important thing here is to define carefully the characteristic to be studied and then to select groups that differ in this characteristic. **Instrumentation.** There are no limits on the types of instruments that may be used in causal-comparative studies. Achievement tests, questionnaires, interview schedules, attitudinal measures, observational devices.

**Design.** The basic causal-comparative design involves selecting two or more groups that differ on a particular variable of interest and comparing them on another variable or variables. No manipulation is involved. The groups differ in one of two ways: One group either possesses a characteristic (often called a criterion) that the other does not, or the groups differ on known characteristics. These two variations of the same basic design (sometimes called a criterion-group design) are as follows.

The first step in an analysis of a causal-comparative study is to construct frequency polygons and then calculate the mean and standard deviation of each group if the variable is quantitative. These descriptive statistics are then assessed for magnitude. A statistical inference test may or may not be appropriate, depending on whether random samples were used from identified populations (such as creative versus noncreative high school seniors). The most commonly used test in causal-comparative studies is a test for differences between means. When more than two groups are used, then either an analysis of variance or an analysis of covariance is the appropriate test. Analysis of covariance is particularly helpful in causal-comparative research because a researcher cannot always match the comparison groups on all relevant variables other than the ones of primary interest. Analysis of covariance provides a way to match groups «after the fact» on such variables as age, socioeconomic status, aptitude, and so on. Before analysis of covariance can be used, however, the data involved need to satisfy certain assumptions. The results of a causal-comparative study must be interpreted with caution. As with correlational studies, causal-comparative studies are good at identifying relationships between variables, but they do not prove cause and effect.

The most powerful way to check on the possible causes identified in a causal-comparative study, of course, is to perform an experiment. The presumed cause (or causes) identified can sometimes be manipulated. Should differences between experimental and control groups now be found, the researcher then has a much better reason for inferring causation.

For example, we can investigate the process of students socialization in Great Britain and in the Republic of Belarus and see the difference between their behavior, their range of possible interests and their entering a particular social setting. Our purpose here is to

suggest what might be learned by examining the links of a socialization chain rather than by examining any one socialization episode in isolation.

Causal-comparative research in socialization seeks to identify associations among students' ways of life, attitudes towards the process of study and leisure time.

Causal-comparative research attempts to determine the cause or consequences of differences that already exist between these groups of individuals. The basic causal-comparative approach is to begin with a noted difference between two groups and then to look for possible causes for, or consequences of, this difference. The first step in formulating a problem in causal-comparative research is usually to identify and define the particular phenomena of interest, and then to consider possible causes for, or consequences of, these phenomena.

The important thing for socialization as a sample for a causal-comparative study is to define carefully its characteristics and then to select the differences in these characteristics.

It's necessary to remember that the results of causal-comparative studies should always be interpreted with caution, since they do not prove cause and effect.

The problems touched upon in the report are of great importance. According to the title of our report we paid a special attention to the causal-comparative research and the process of socialization. Causal-comparative type of research is intended to determine the cause for or the consequences of differences between groups of people (for example, between students of Great Britain and the Republic of Belarus in the process of socialization). So it is possible to conclude that a reader is provided with some material on the interested theme.

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JEL classification: A1

## **BLOCKCHAIN – THE NEW INSTRUMENT OF SAFE KNOWLEDGE TRANSFER**

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ABSTRACT

*BLOCKCHAIN, ENTERPRISES, INNOVATION, KNOWLEDGE TRANSFER*

*Blockchain is not only the innovation or technology, it is very wide notion including lots of scientific disciplines. But the most important is its influence at enterprises development by knowledge transfer security. There is also a value that blockchain is usually owned by the public.*

### INTRODUCTION

Enterprises are frequently faced with potentially lucrative contracts that require either scale or expertise beyond their individual scope. This motivates them to form short term collaborative networks. These networks have been studied under the guise of virtual organisations, such as in Mowshowitz (1997). The traditional means of supporting the formation and coordination of such networks have been derived from centralised work flow based techniques designed for large companies (Mehandjiev and Grefen, 2010). In consequence, alternative techniques are needed and the recent rise of blockchain and distributed ledger technology (DLT) offers a highly promising alternative solution.

### BLOCKCHAIN

Gartner (2018) define blockchain technology as «an expanding list of cryptographically signed, irrevocable transactional records shared by all participants in a network. Each record contains a time stamp and reference links to previous transactions. With this information, anyone with access rights can trace back a transactional event, at any point in its history, belonging to any participant». Blockchain technology has evolved from early applications such as bitcoin to offer the potential to represent assets digitally, enable new forms of value exchanges and to interact/transact without a central authority or a middleman. Blockchain provides a powerful mechanism for blowing traditional and centralized models (such as that of the firms) to bits.

Blockchain is a set of records, called blocks, which contain a timestamp, list of data variables and are each referenced to its predecessor record by a cryptographic hash. The linking to the predecessor makes the whole set look similar to the chain, hence it received



the name of a blockchain (Global Blockchain Benchmarking Study, 2017). By design the blockchain is immune to any existing record change, making the records immutable once written in the blockchain (Furlonger & Valdes, 2017). The full blockchain (or its every part) is stored in distributed nodes, usually owned by the public. They are not related to any specific entity (as a majority rule), making the blockchain virtually impossible to destroy and / or hack. Presently it is the very intrinsic value.

The security aspect embedded in blockchain opens up the possibility to «disintermediate» many business activities, removing the middlemen, reducing costs and simplifying processes. Blockchain's ability to achieve remote, autonomous consensus between users, could help enterprises to reduce the costs (including security costs) and the time needed to bring products and transactional services to markets, to simplify administrative process as payment, billing, and contracts. Blockchain enabled smart contracts could be a more economical option for enterprises than traditional ones and could help companies improving their processes in terms of time and money by simplifying invoices, salary payments, inventory management and making sure payments are made on time, thus reducing the hurdle of cash flow for small businesses.

Blockchain and DLTs could thus support enterprises in reducing their overhead costs by hosting services on the blockchain instead of buying software licenses and hiring personnel (Kuznetsov, 2018). Some recent facts illustrate the fast-growing importance of this technology:

1. \$176 billion is Gartner's forecasts regarding blockchain's business growth in value-add by 2025 (Lovelock and David Furlonger, 2017) (Europe has invested nearly \$200 million in 2017 (IDC, 2018)),
2. Western Europe will be the second largest region worldwide regarding blockchain spending. The initial investment in proof-of-concept cases will nearly triple its 2018 spending, reaching \$1.8 billion by 2021 (the US are expected to invest more than \$4 billion by 2021 (IDC, January 2018)),
3. \$600 billion: The size of the entire cryptocurrency market by the end of 2017, according to CoinMarketCap. Consider the pace of growth over the last 12 months: it started the year at just \$16 billion (Coinmarketcap, 2018),
4. European start-ups have raised \$1.76 billion in capital through an Initial Coin Offerings (ICO) over the last 3 years (Atomico, 2018). This puts Europe ahead of all other continents,
5. the number of blockchain-related LinkedIn job postings more than tripled over the last year. Organizations badly in need of blockchain developers are setting up training centers, outsourcing, or even nabbing talent before they've graduated college (Financial Times),
6. 13 percent of Senior IT leaders surveyed by IDG Connect research have clear and

current plans to implement blockchain. Based on this statistic, plenty of CIOs decided to take time to investigate blockchain (IDG Connect, 2018),

7. blockchain is the 2nd most popular technologies and technological solution on online media channels in 2017 (cybersecurity is 1st but artificial intelligence comes 3rd) (Digital Transformation Scoreboard, 2018).

#### DISTRIBUTED LEDGER TECHNOLOGIES (DLTS)

The Distributed Ledger Technology (DLT) ensures that distributed copies of identical records are immutable and traceable, enabling management, governance and execution of partnerships and contracts across entities. The DLTs applications are growing and the expectations are numberless (Swan, 2015; Tapscott & Tapscott, 2016): from digital currencies to distributed autonomous organizations, corporations and societies (DAOs, DACs and DASs), from blockchain government to blockchain science, and from digital art to digital identity verification. Some have suggested that much of the entrepreneurial development on this growing field takes the form of «X, but on the blockchain» (Allen, MacDonald & Potts, 2016), in a way that resembles the dot-com boom of the late 1990s, where the formula was «X, but on the internet» (Davidson, De Filippi & Potts, 2016). Part of the current challenge resides in navigating the moving waters between realistic descriptions, plausible expectations, and technophilic and techno utopian hype, frequently tied to business strategies<sup>1</sup>, (Monterde A., Calleja-López A., Aguilera M., Barandiaran X.E. & Postill J., 2015).

The adoption of DLTs will have profound effects on the nature of companies and in the entire processes within the value chain of the enterprises<sup>2</sup>: how they are funded, organized and managed, how they create value, and how they perform basic functions such as marketing, accounting, and incentivising people. It allows companies to eliminate transaction costs and use resources on the outside, as easily as resources on the inside (Tapscott & Tapscott, 2017).

#### CONCLUSIONS

DLTs are still recent and fast evolving and proliferating, thus, the complexity of integration becomes a key barrier to entry for developers and SMEs that do not necessarily have long-term competency and exposure to DLTs. This also results in higher costs of technology

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<sup>1</sup> As in reports: <https://www.ft.com/content/b5b1a5f2-5030-11e7-bfb8-997009366969> 3.

<sup>2</sup> The value chain also known as Porter's Value Chain Analysis is a business management concept that was developed by Michael Porter. In his book *Competitive Advantage* (1985), Michael Porter explains Value Chain Analysis; that a value chain is a collection of activities that are performed by a company to create value for its customers. Value Creation creates added value which leads to competitive advantage. Ultimately, added value also creates a higher profitability for an organization.

adoption. There is a lack of secure environments where SMEs can test DLTs-backed applications in operational conditions. There is also a lack of awareness in European SMEs of what is actually available in the market and therefore potentially transferable for SME uptake, what means that there is a lack of knowledge to use such systems.

It is possible to point the benefits for using the blockchain technology in enterprises such as cost reduction, time efficiency, simplicity of use, openness and immutability as well as functionality. These benefits are inducing to spreading knowledge about this technology towards enterprises and to developing research in this area.

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## INTEGRATION OF ARTIFICIAL INTELLIGENCE INTO MARKETING

## ИНТЕГРАЦИЯ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА В МАРКЕТИНГ

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### ABSTRACT

COGNITIVE MARKETING, ARTIFICIAL INTELLIGENCE, NEURAL NETWORK, CUSTOMER, MARKETING RESEARCHES

*The main aspects of integration in an artificial intelligence into marketing are considered in article. The analysis of such concepts as cognitive marketing and*

### АННОТАЦИЯ

КОГНИТИВНЫЙ МАРКЕТИНГ, ИСКУССТВЕННЫЙ ИНТЕЛЛЕКТ, НЕЙРОННЫЕ СЕТИ, ПОТРЕБИТЕЛЬ, МАРКЕТИНГОВЫЕ ИССЛЕДОВАНИЯ

*В статье рассмотрены основные аспекты интеграции искусственного интеллекта в маркетинг. Проведен анализ таких понятий как когнитив-*

*an artificial intelligence is carried out. Evolution of information systems is studied. Features of development in intellectual information systems are selected. The main directions of application in an artificial intelligence in marketing are revealed such as: web design, contextual advertising, and assessment of efficiency of the conducted advertising campaigns, search in photos, obtaining data to advertisers for provision of news or the ad info. The most perspective direction of application of an artificial intelligence is defined. Premises of development in cognitive marketing are revealed.*

*ный маркетинг и искусственный интеллект. Изучена эволюция информационных систем. Выделены особенности развития интеллектуальных информационных систем. Выявлены основные направления применения искусственного интеллекта в маркетинге, такие как веб-дизайн, контекстная реклама, оценка эффективности проведённых рекламных кампаний, поиск по фотографиям, получение сведений рекламодателям для предоставления новостей или рекламной информации. Определено наиболее перспективное направление применения искусственного интеллекта. Выявлены предпосылки развития когнитивного маркетинга.*

Now rapid development of information and communication technologies and concepts of an artificial intelligence led to practical and wide use of intellectual systems. Their action can be found in mobile phones, expert systems, prediction, etc. Evolution of information systems towards their intellectuality led to appearance of a new type of software products which received the name intellectual information systems. [3]

The artificial intelligence can become the modern tool of the marketing specialist allowing to process huge data arrays without serious time expenditure, to obtain data from a photo and video records, to reveal potential customers on behavior on social networks, etc. Its use allows analyzing data of all types, to build in means of the analysis daily marketing processes, doing communications more address, relevant and effective.

The artificial intelligence is the mathematical structure imitating certain aspects of operation of a human brain and showing such opportunities as ability to informal training, generalization and a clustering of not classified information, to prediction. The most important difference is that the artificial intelligence doesn't need in advance known model, and builds it only on the basis of the shown information. Therefore, the artificial intelligence became applicable everywhere where it is necessary to solve problems of prediction and classification where there are tasks for which it's hard to build an algorithm [1].

The main objective of an artificial intelligence is processing the images. At the same time

the ability of an artificial intelligence to train, to extract of the regularities hidden in big arrays of information is used. If there is any communication between input and output data which even isn't found by traditional correlative methods, then the artificial intelligence is capable to be set up automatically on it with the given accuracy rating. Besides, it allows to estimate comparative importance of different types of input information.

In recent years possibilities of intellectual technologies have considerably extended due to appearance of new models of representation of knowledge, new theories and ideas of an artificial intelligence. The considerable milestones relating to the development of intellectual information systems and technologies are the following:

- appearance to argumentation models and a reasoning instead of a logical output;
- intellectual network models;
- appearance of methods of search of relevant knowledge;
- appearance of algorithms of recognition of texts and images;
- appearance of methods of graphical representation of knowledge;
- development of multigene systems;
- appearance of the computation based on genetic algorithms, a fuzzy logic, neural networks.

The artificial intelligence holds a specific place in marketing. Thanks to synthesis of technologies of depth training, machine vision and a cognitive neurobiology the artificial intelligence can be applied both to a market research, and to personalization of content for the purpose to improving of process in information analysis and determination of scale to impact on customers without excess expenses.

Among the main directions of application of an artificial intelligence in marketing select web design, contextual advertising, assessment of efficiency to the conducted advertising campaigns, search by photos, obtaining data to advertisers for provision of news or the ad info.

One of the most perspective directions of application an artificial intelligence is an opportunity to personalize advertising content, giving to each customer the message suitable for it. The correct message will come to the necessary person in due time.

The greatest interest of marketing specialists is attracted by a combination of use in an artificial intelligence and cognitive marketing. Cognitive marketing is rather a new term which was formed on a joint of marketing and psychology. What is known to cognitive psychologists today can be a link which lacks practical marketing in the order that it became full-fledged scientific discipline, but not a congestion of accidental finds and observations. It studies perception and thinking as information processes that try to understand consciousness of the person, assimilating a brain to the computer which processes data.

Premises of development of cognitive marketing:

- Physiological needs of the solvent population are satisfied. Vendors create new

needs (goods), new more effective technologies of consuming and created demand on them.

- Appearance of hi-tech goods, complication of goods and/or appearance of goods with the uprated consumer properties. In order to sell them, it is necessary to inform a customer about knowledge of goods and technology of its consuming, to train a customer to use goods properly.

- Growth of customer needs in education for knowledge acquisition. People (especially leaders of judgments) transfer to new technologies of consuming more consciously.

- Development and fast distribution of the information technologies allowing to impart effectively knowledge and to train people.

Synthesis of artificial intelligence and cognitive marketing will allow the enterprises:

- to reveal unsatisfied needs of clients and to upgrade a product;
- to attract more clients and to raise profit thanks to individual approach, advantages, offers and prices;

- to receive the maximum return from cooperation with the available clients due to optimization of investments into solidifying of relations.

Today collection of necessary information on customers is carried out by many enterprises and organizations based on surveys and questioning, but such research incur big monetary and time expenses, and, above all — are extremely ineffective as people under the influence of different effects (effect of testing, role selection, tendencies, etc.) don't say the truth about themselves, they say about the person they want to be. Because of it the accuracy of such researches doesn't exceed 40 %.

According to the research related to collection, processing of information, to compilation of a portrait of customers and a client database, the analysis technique of the this «digital traces» of potential and real customers on social networks – posts, reposts, likes, comments, etc. – is more effective [2].

Thus, today marketing specialists are faced by the following research objective of this field of science: development of theoretical and methodical aspects and recommendations for enterprises and organizations for enhancement of market research regarding the procedure of collection, processing and information analysis about potential and real customers in the Internet for the purpose of formation and adjustment of consumer behavior that will increase competitiveness and efficiency of enterprises and organizations.

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## TRENDS OF DEVELOPMENT IN AGRICULTURAL COMPLEX OF THE EURASIAN ECONOMIC UNION (EAEU) IN FACE OF GLOBAL ECONOMIC CHALLENGES

## ТЕНДЕНЦИИ РАЗВИТИЯ АГРОПРОМЫШЛЕННОГО КОМПЛЕКСА ЕВРАЗИЙСКОГО ЭКОНОМИЧЕСКОГО СОЮЗА (ЕАЭС) В УСЛОВИЯХ ГЛОБАЛЬНЫХ ЭКОНОМИЧЕСКИХ УГРОЗ

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### ABSTRACT

AGRICULTURAL COMPLEX, FOOD SECURITY,  
AGRICULTURAL COMMODITIES AND FOOD,  
STATE SUPPORT OF AGRICULTURE

*Problems of development of national agro-industrial complexes become more aggravated in face of expanding global economic challenges. Implementation of integration unions is partially balancing the appearing problems due to adoption of coordinated agricultural policy. The main idea of this investigation is to state that barrier-free access to common*

### АННОТАЦИЯ

АГРОПРОМЫШЛЕННЫЙ КОМПЛЕКС,  
ПРОДОВОЛЬСТВЕННАЯ БЕЗОПАСНОСТЬ,  
СЕЛЬСКОХОЗЯЙСТВЕННЫЕ ТОВАРЫ И ПРО-  
ДОВОЛЬСТВИЕ, ГОСУДАРСТВЕННАЯ ПОД-  
ДЕРЖКА СЕЛЬСКОГО ХОЗЯЙСТВА

*Проблемы развития национальных агропромышленных комплексов обостряются в условиях расширения глобальных экономических угроз. Формирование интеграционных образований частично нивелирует, возникающие проблемы за счет проведения согласованной аграрной политики. Основная*



*market guarantees national food security of member states and reduces the risk of global challenges.*

*идея исследования заключается в том, что предоставление безбарьерного выхода на общий рынок обеспечивает национальную продовольственную безопасность стран-членов и снижает риск глобальных угроз.*

The EAEU member states play significant role in the world food market, being active trade participants both in exporting and importing of agricultural commodities and food. During the last years substantial quality changes occurred in agricultural and foodstuffs trade in member states, sustained decrease in importing food commodities is observed.

In 2016 agricultural commodities from the EAEU states were exported to more than 160 countries. Furthermore, the EAEU have significant potential for exporting agricultural products. Within 2012–2016 the annual average of agricultural export from the EAEU was of 17,5 bln. USD (Table 1) reaching a historical high of 18,9 bln. USD in 2014.

Table 1 – EAEU Foreign Trade In Agricultural Commodities and Food, bln. USD [1].

Trade direction	Year					2016/2015, %
	2012	2013	2014	2015	2016	
Import	43,6	45,6	42,6	29,0	26,5	91,4
Export	18,3	16,9	18,9	16,4	16,9	103,0
Sales turnover	62,0	62,5	61,5	045,3	43,4	95,8
Balance	-25,3	-28,7	-23,7	-12,6	- 9,6	75,4
Share of agricultural trade in total turnover, %	6,6	6,7	7,0	7,8	8,5	+0,7 %
Export of agricultural commodities in agricultural GDP, %	13,8	11,1	13,2	15,0	15,3	+0,3 %

During 2012-2016 the volume of import of agricultural commodities and food to the EAEU member states had an annual average of 37,5 bln. USD.

Therefore, in spite of functioning under the lasting economic crisis and volatility of the world commodities markets, in the development of agro-industrial economic integration of the EAEU member states positive trends emerged. Nevertheless, it is necessary to red-flag quite a low level of interregional trade reaching only 15,7 % in 2016, while in the European Union this value is about 70 %. [1].

In this context it is topical to reduce the dependence from imported supplies of food to the Union's market by means of realizing the potential of mutual trade of member states.

In the EAEU fixed obligations exist for member states regarding permitted level of state support of agriculture, which distorts trade data, and these obligations are not in contradiction with the obligations assumed by the EAEU states before the WTO (Table 2).

Table 2 – Permitted level of state support of agriculture in member states in the limits of the WTO and the EAEU [2].

<b>EAEU State</b>	<b>Date of joining the WTO</b>	<b>Permitted level of state support in the WTO, (% of gross value of produced agricultural production)</b>	<b>Permitted level of state support of agriculture in the EAEU</b>
Republic of Armenia	05.02.2003	up to 2008 – 10 %; since 2008 – 5 % (level de minimis)	corresponds to obligations in the WTO
Republic of Belarus	Talks in process about joining the WTO		10 % of gross value of produced agri-cultural production
Republic of Kazakhstan	30.11.2015	8,5 %	corresponds to obligations in the WTO
Kyrgyz Republic	20.12.1998	5 %	
Russian Federation	22.08.2012	cut from 9 bln. USD in 2012 to 4,4 bln. USD by 2018	

In general, approaches to the classification of supporting measures in dependence of their distorting influence to the trade were adopted in the Union by analogy with the rules of the WTO. In accordance with the EAEU Treaty the member states apply the Common Customs Tariff and other common measures of regulating the trade with the third countries.

Since January 1<sup>st</sup>, 2012 common system of customs tariffs and non-tariff regulation of foreign trade, customs, veterinarian, sanitary and phytosanitary controls are implemented.

Commodities transportation through inner limits inside the Union is realized without impediments. Customs duties incomes are divided between the states as per agreed proportions: Armenia – 1,11 %, Belarus – 4,56 %, Kazakhstan – 7,11 %, Kyrgyzstan – 1,9 %, Russia – 85,32 % [2].

The process of tightening the integration in agricultural sphere of the EAEU is determined not only by internal, but also by external, i.e. global factors of development of the world agriculture. The most significant are the economic challenges.

One of the economic risks is the uncertainty of global agricultural markets promoted by intensive growth of demand in foodstuffs and increasing consumption of animal products. The Food and Agriculture Organization of the United Nations (FAO) and the Organization for Economic Cooperation and Development (OECD) forecasts say that as a result of population and incomes increase by 2050 the global consumptions of agricultural commodities will grow another 60-70 % in comparison with early 2000. It will bring the necessity of producing annually additional 940 mln. tons of cereals and 200-300 mln. tons of meat. [3].

In a long-term forecast aggravation of the problem of continued supplies with food of urbanized zones is possible caused by concentration of population in big cities. Fast growth of megapolises with over 10 mln. inhabitants gives causes for concern from the point of view of guaranteeing stable functioning of huge production and distribution systems. The characteristics of such megapolises are complicated logistic infrastructure, high intensity of economic processes, dependence of the inhabitants from commodities produced out of these megapolises, foodstuffs first of all.

One more trend of development of global agriculture is the increase in production volumes and intensity of international foodstuffs trade. In spite of the effects of global economic and financial crisis the annual average of growth rate in agro-industrial output never went lower than 2 %. Volatility of global food markets became one of the negative consequences of increase in international trade with agricultural commodities.

It creates threats to food security in developing countries. At the same time for the EAEU states these trends represent opportunities for amplifying their participation on new food markets of developing countries.

Limitations in international trade are determined by the requirements of national food and economic safety. National governments' attitude in many countries differ from free international trade principles. Inside the limits of the WTO and other international mechanisms the developed countries are able to restrain the access to their own food markets using non-tariff measures, efficiently insisting at the same time on wide opening of internal markets in the developing countries. Many states are disposed to consider that the food safety is not defined by efficient access to the global food market, but by the share of national agricultural commodities on inner market.

Since the implementation of the WTO Agreement on Agriculture in 1955 subsidies in agricultural output and export applied in the developed countries provoke suppression of growth in agriculture in the developing countries. Often the strategy of developing big agro-industrial companies creates conditions adverse for functioning of small agricultural producers and private households. It leads to technological disconnect between big agroholdings and small households, which is manifested in a specially sharp way due to the low availability of borrowing for small agribusiness accompanied by high risks of investment

in it. The solution of this problem can be assistance to agricultural cooperation and credit financing of big cooperatives.

Therefore, under the conditions of further enhancement of integration in agro-industrial complex the EAEU member states should take into account the system of global economic factors [4; 192].

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## IMPLEMENTATION OF THE MATHEMATICAL MODELING METHODS DURING THE STARTUP MARKETING STRATEGY DEVELOPMENT

## ВНЕДРЕНИЕ МЕТОДОВ МАТЕМАТИЧЕСКОГО МОДЕЛИРОВАНИЯ ПРИ РАЗРАБОТКЕ МАРКЕТИНГОВОЙ СТРАТЕГИИ СТАРТАП-ПРОЕКТА

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### ABSTRACT

*STARTUP SUCCESS; STARTUP MARKETING STRATEGY; BAYESIAN NETWORKS; MANAGEMENT SOLUTIONS; INNOVATION*

*Startups are an important tool for the development of the world economy. But risks in the startup industry are high. So, determination of the success factors and prediction of the startup success is an important task which can be solved by the implementation of the mathematical modeling methods. The model for startup success prediction depending on the combinations of conditions was developed in the form of the Bayesian network. It was determined that the modeled startup success probability is most likely to be of a low or an average level.*

Startups are an important tool for the development of the world economy and scientific & technical progress, while the developed startup industry and infrastructure help to

### АННОТАЦИЯ

*УСПЕШНОСТЬ СТАРТАПА; МАРКЕТИНГОВАЯ СТРАТЕГИЯ СТАРТАПА; БАЙЕСОВСКИЕ СЕТИ; УПРАВЛЕНЧЕСКИЕ РЕШЕНИЯ; ИННОВАЦИИ*

*Стартапы являются важным инструментом для развития мировой экономики. Однако риски в стартап-индустрии высоки. Поэтому определение факторов успеха и прогнозирование успешности стартап-проектов является важной задачей, которая может быть решена путем внедрения методов математического моделирования. Разработана модель прогнозирования успешности стартапов в виде байесовской сети. Определено, что модельная вероятность успешной реализации стартап-проектов будет иметь низкий или средний уровень.*

implement innovations much faster and at the same time using fewer resources. Recently, the number of innovative startup-projects both on the B2C and B2B markets has started to increase, in particular, in such areas as smart cities, green economy, sustainable and environmentally friendly industry development, light and textile industry, electronics, nanotechnology, etc. However, the risks in the startup industry are quite high, so only some projects reach the level of a successful and scalable business. Therefore, determination of the success factors and prediction of the startup success levels is an important task and mathematical modeling methods are among the most suitable instruments for this purpose. In particular, such models can be created on the bases of the Bayesian networks.

So, the aim of the conducted research was to identify the key startup success factors and to create an instrument for startup success evaluation. Currently, a lot of scientific investigations are devoted to the study of the features of innovative startups. For example, the important results can be found in the following papers [1–6].

It was found that there are three key constituents, which influence startup success – an external environment, startup activity and an internal environment of the startup. For the modeling, the discovered factors were divided into three groups according to their influence on these constituents. In the developed Bayesian network model the external environment was considered as favorable, neutral or unfavorable; startup activity was considered as effective or inefficient; while the internal startup environment was considered as a reliable, which facilitates startup development and strengthens its positions on the market, or as an unreliable, if the current environment is harmful to the startup development [7]. These constituents affect the startup success which is evaluated in the Bayesian network model as high, average and low level.

The mathematical model for prediction of the startup-projects success depending on the combinations of the conditions on various markets, regions, etc. was developed in the R and R Studio software by the implementation of the components of the methods described in [8–10]. The specialized packages Bnlearn, Rgraphviz, gRain, Lattice, etc. were used for the modeling purposes. The Bayesian network structure was composed on the bases of the determined success factors. The obtained network consisted of 25 nodes and 24 arcs.

On the bases of the analyzed dataset, it was determined that the modeled startup success probability is most likely to be of a low or an average level with probabilities of 43.9 % and 41.4 % respectively, while the probability of a high success level is only 14.7 % [7]. The developed model can be also used to analyze various combinations of conditional probabilities in order to analyze interactions between components influencing startup success. It was found that high success levels can be observed only when all three constituents, described above, are favorable, effective and reliable. At the same time, in combinations, in which only one option was negative, the average success levels were

dominating; in the cases of combinations in which two of the three components were negative, low success levels prevailed [7].

The developed Bayesian network model of startup success can be used for the analysis of innovative projects samples in order to predict success levels in a particular country, region, in a specific market, etc. This model can be used during startup marketing strategy development and can contribute to the more efficient and sustainable management solutions.

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## GENESIS OF THE PARADIGM OF SUSTAINABLE ECONOMIC DEVELOPMENT

### ГЕНЕЗИС ПАРАДИГМЫ УСТОЙЧИВОГО РАЗВИТИЯ ЭКОНОМИКИ

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#### ABSTRACT

*SUSTAINABLE DEVELOPMENT, INDUSTRIAL SOCIETY, POST-INDUSTRIAL ECONOMY, GLOBAL DYNAMIC EQUILIBRIUM, NEW WORLD ECONOMIC ORDER*

*In the second half of the twentieth century, in developed countries, there was a transition from the era of industrial society to the post-industrial economy, which is also referred to as the «cybernetic» and «information society». The article analyzes the genesis, stages and essence of the paradigm of sustainable development, and also identifies the main contradictions that caused a radical change in the paradigm of social development.*

In the second half of the twentieth century, in developed countries, there was a transition from the era of industrial society to the post-industrial economy, which is also referred to as the «cybernetic» and «information society».

The concept of sustainable development was a logical transition from the ecologization of scientific knowledge and socio-economic development, which began to flourish in the 1970s. Important research and analysis of the state of the environment made it possible to find out that modern civilization lives in the conditions of an increasing ecological crisis

#### АННОТАЦИЯ

*УСТОЙЧИВОЕ РАЗВИТИЕ, ИНДУСТРИАЛЬНОЕ ОБЩЕСТВО, ПОСТИНДУСТРИАЛЬНАЯ ЭКОНОМИКА, ГЛОБАЛЬНОЕ ДИНАМИЧЕСКОЕ РАВНОВЕСИЕ, НОВЫЙ МИРОВОЙ ЭКОНОМИЧЕСКИЙ ПОРЯДОК*

*Во второй половине двадцатого века в развитых странах произошел переход от эпохи индустриального общества к постиндустриальной экономике, которая также упоминается как «кибернетическое» и «информационное общество». В статье анализируется генезис, этапы и сущность парадигмы устойчивого развития, а также выявляются основные противоречия, вызвавшие радикальное изменение парадигмы социального развития.*



that can lead to the death of all mankind.

The cause of this crisis was the imbalance in ecological systems and in the relationship between society and nature, which gave birth to a whole system of contradictions and led to the need of developing a paradigm for sustainable economic development (Table 1).

A response to the world community's concern with the state of environmental problems was the creation of international non-governmental scientific organizations to study global processes on the Earth, such as the Club of Rome, the International Institute for System Analysis, the International Federation of Institutes of Advanced Studies (IFIAS). In the USSR, the All-Union Institute for System Studies was established.

Table 1 – System of global contradictions and its consequences

The contradiction	Its consequences
Between the growing needs of people and the inability of the biosphere to provide them without breaking down	Expenditure of available resources outstrips the formation of new ones. Degradation of the natural environment occurs, irreversible negative processes develop in the biosphere: air pollution is one of the main causes of premature mortality and health problems, especially with child health; it is about 20 % of vertebrate species are threatened with extinction. Water quality deteriorates. In terms of large river systems, it does not meet the standards of the World Health Organization (WHO)
Between the consumer attitude of man to the environment and the ability of the biosphere to maintain a system of natural biogeochemical processes of self-healing	
Between production and consumption	
Between the growth of global gross income and the reduction of global wealth (life support resources)	
Between collectivism and individualism	The growing disparities, both between countries and within individual countries, aggravation of the problems of poverty and hunger Deterioration of public health and illiteracy; extreme uneven distribution of resources, which destabilizes the situation both in individual countries (wealth-poverty), and in the world as a whole and generates instability
Between rich and poor	

Source: developed by the author on the basis of [1,2,3,4].

The next stage in the formation of a new paradigm of economic development was the Stockholm United Nations Conference on the Environment (1972), where the United Nations Environment Program (UNEP) was established. In the same year, commissioned by the Club

of Rome, the research book «Limits of Growth» was published. However, the very notion of «sustainable economic» development has come into play since the publication of the «Our Future» report of the World Commission on Environment and Development (WCED), chaired by the Prime Minister of Norway, Gro Harlem Brundtland, in 1987. The report formulated the thesis of a «new era of economic development safe for the environment» – sustainable development, implying a model of socio-economic development in which the satisfaction of the life needs of the present generation is achieved without the exhaustion of natural resources in future generations and environmental degradation.

And, finally, as the main strategy of the modern stage of the world economy, «sustainable development» was first announced at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992. It made a historic decision to change the course of development of all world society. UNCED has shown awareness of the perniciousness of the conventional path of development, which has been characterized as unsustainable development, fraught with crises, catastrophes and omnicide [4].

Thus, the strategy of sustainable development as the idea of a new cultural paradigm emerged at the end of the 20th century due to the realization that natural evolution has brought humanity into a difficult situation characterized by the following characteristic features: first, the use of available resources outstrips the formation of new ones; secondly, the distribution of resources is extremely uneven, which destabilizes the situation both in individual countries (wealth-poverty) and in the world as a whole; thirdly, degradation of the natural environment occurs, irreversible negative processes develop in the biosphere.

On the basis of the analysis of the problem, the following conclusions can be drawn: The first stage was the ecologization of scientific knowledge and socio-economic development that began in the 1970s and the creation of international non-governmental scientific organizations to study global processes on Earth; the second stage, the involvement of the international community at the state level in the solution of environmental problems (the UN Conference on the Human Environment) and the creation of the United Nations Environment Program (UNEP) (1972); The third stage, the term «sustainable economic development» appeared in the report of the International Commission on Environment and Development «Our Future» (1987); the fourth stage, the paradigm of «sustainable development» is recognized as the main strategy of the current stage of development of the world economy (UN Conference on Environment and Development (UNCED), Rio de Janeiro, 1992).

It was revealed that along with a change in the generally accepted model for the development of the world, a change in the general scientific paradigm was also observed. The traditional economy differs from the sustainable development economy according to a number of criteria, the main ones being the following:

- firstly, the basis of the traditional economy is unlimited economic growth; in a

sustainable development economy, the foundation is limited, sustained growth and the search for «consumption and production patterns» that meet the essential needs of humanity;

- secondly, the goal of the traditional economy is to maximize profits and satisfy the needs of consumers; in a sustainable economy, the main goal is to maintain a stable balance between economic, social and biological systems;

- thirdly, the theoretical concept of the traditional economy is based on the thesis that maximizing profits and satisfying consumers in a market system is compatible with maximizing the well-being of people and that market failures can be corrected by government policy; the paradigm of sustainable economic development is based on the thesis that short-term profit maximization and satisfaction of consumer consumers will ultimately lead to the depletion of natural and social resources on which human well-being and the survival of biological species rest;

- fourthly, there is a different understanding of the role of labor in the system of reproduction. In a traditional economy, the labor force is a factor of production, the same as capital. If necessary, they can replace each other. Within the concept of sustainable development, labor becomes a key factor. Investments in labor (in other words, human capital) can involve long-term factors of economic growth based on scientific and technical progress, since skilled labor can be improved.

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JEL Classification: D020, D830, F550, R580, Z130

## **POTENTIAL: SPA, TOURIST, INVESTMENT AND CULTURAL OF THE PARTNER CITIES OF GŁUCHOŁAZY AND JESENIK – ON THE BASIS OF THE ANALYSIS OF THEIR OFFICIAL WEBSITES**

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ABSTRACT

*RESOURCES, THE POLISH-CZECH BORDERLAND, ECONOMIC ANTHROPOLOGY,  
COMMUNICATION*

*It is commonly believed that the Internet may significantly influence the development of tourism, investment, culture and spa environment. The authors of the study examined the status and scope of websites developed by units of local government administration of two twin towns: Głuchołazy (Poland) and Jeseník (the Czech Republic). Both towns are located on the Czech and Polish border, both hold the status of a health resort and the distance between them is 19 kilometres. The authors analyzed the extent of Internet use by both cities in the promotion of their values in the field of tourism, investment, culture and the spa environment. The study also showed significant differences and identified possible causes.*

### INTRODUCTION

The Internet was introduced to the public in the 1960s. Since then this new technical solution has influenced the traditional market of economic offers. Understandably, this process was followed by scientific studies. The studies covered activities of the B2B sector (business-to-business) [1] and the development of e-commerce in B2C sector (business-to-consumer) [2]. Administrative units of local self-governments also started using the Internet. The authors analysed public websites of two towns located on the Polish and Czech border.

### COMMON ELEMENTS IN THE HISTORY OF GŁUCHOŁAZY AND JESENIK

From the late Middle Ages until the war against Prussia on Silesia in the 18<sup>th</sup> century, Głuchołazy and Jeseník belonged to Austria. After the war, they were separated and located in two different countries. This favoured their expansion based on natural resources,

including climatic values of the mountainous terrain, its climate and spring waters. The Ziegenhals Bad health resort may serve as an example on how the spa infrastructure was developed in today's Polish Głuchołazy. The same happened in the Czech Jeseník, located 19 km away from Głuchołazy. In the 1930s both towns were influenced by the consequences of the conferences in Yalta and Potsdam as well as by the Beneš decrees which triggered the immigration of the German population. Abandoned villages were occupied by residents from other areas. The existing infrastructure was adapted to the needs of the socialist system. The situation was changed by political transformation in 1989. The development of the Internet helped both towns to promote their advantages. Both towns benefited from this possibility [4], [5].

#### PRESENTING THE HEALTH-RESORT VALUES

The spa attributes of Głuchołazy were presented as a video guide on its website. The presentation also included German history of this health resort. The recreated spa park served as connection between the past and the present. In the case of Jeseník, the town's assets were presented through the spectrum of current activities: 80 water springs, the new Balneopark, and fitness space as well as tennis courts. Differences in presenting spa values of Głuchołazy and Jeseník resulted from the type of activities taken in both towns. Despite the functioning of the Rehabilitation and Recreation Centre «Skowronek» [Lark] run by Caritas of the Opole Diocese [6], no information about the centre was available on Głuchołazy website due to the departmental (ecclesiastical) character of the object. In the case of Jeseník after 1989, the spa was privatized. It became a joint-stock company. This change influenced the marketing approach in managing the appearance of this health resort.

#### PRESENTING THE TOURISM VALUES

The tourism potential of Głuchołazy was presented on its website in the «For Tourists» tab. The website also provided tabs on the Tourist Information Centre, Accommodation Base, Tourist Routes and Tourist Attractions, as well as Cultural Events. The website's content was presented as short notes illustrated with colourful photographs. The website also included a 25-minute video presentation entitled «Green Pearls of Opole», which used myths and legends to promote the tourist attractions of the area.

On the Jeseník website, tourist attractions were presented in the tab «Volný čas». The tab included short information about monuments, interesting places and possible trips. The tab also provided pictures, twelve video presentations and a mobile guide. Such a multimedia presentation helped to promote a wide range of tourist attractions. Jeseník was presented as «the city in the heart of nature». The presentations were very dynamic, focusing viewer's attention not only on the subject but also on the musical background.

### THE INVESTMENT OFFER

The tab «For Companies and Investors» on the Głucholazy website provided information on the benefits applied in 2018 on real estate to support running a business. Thanks to these benefits, the tax relief in Głucholazy was the highest in the Opole Voivodeship. The website also included links to the «Micro-business for entrepreneurs» tabs, providing information on appointing the spokesperson for small and medium-sized entrepreneurs as well as links to other websites offering various forms of support for companies.

The Jesenik website contained Protocols of the Strategic Committee for Development and Investment 2015-2018. Therefore, the initiatives related to changes in the building development in individual districts of the town were documented. In addition, the town's authorities have prepared a number of information for potential investors. However, visitors could find this information only after entering the phrase «Informace pro investory» on the Jesenik website, which also presented investment opportunities in Jesenik.

### CONCLUSION

The authors of Jesenik and Głucholazy websites made an effort to present the towns' values using different means of expression and type of content. Głucholazy used less dynamic solutions than Jesenik. Presentations differed not only in the tools used, but also in the scope of content. Both in Głucholazy and Jesenik, information for potential investors was provided as a multifaceted guide supporting and encouraging their future activities. The analysis of the provided content revealed that Głucholazy has just started to define its strengths, whereas Jesenik has already been using its advantages to promote tourism and cultural values. It is difficult to determine the reasons for the differences based on the analysis of websites. However, it may be argued that intangible causes were significant in shaping these differences.

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## PROBLEMS AND PROSPECTS OF DEVELOPMENT OF CONSUMPTIONS SOCIETY

### ПРОБЛЕМЫ И ПЕРСПЕКТИВЫ РАЗВИТИЯ ОБЩЕСТВА ПОТРЕБЛЕНИЯ

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#### ABSTRACT

CONSUMER SOCIETY, CONSUMER  
CULTURE, ADVERTISING, STATUS

*Consumer culture is a type of culture characteristic of contemporary capitalist way of life, in which material goods are the core of values and meanings.. The consumer society is a characteristic of a new society where all human relationships lose meaning, becoming ritual schemes, signs which define the hierarchy of status or degenerating in the competition. This new way of life practically destroyed the old, traditional consumption, when people bought any goods because they needed them because they satisfied their needs. The author reveals the history of development, as well as the impact of consumer society on the individual and the economic and social life of society as a whole.*

#### АННОТАЦИЯ

ОБЩЕСТВО ПОТРЕБЛЕНИЯ, КУЛЬТУРА  
ПОТРЕБЛЕНИЯ, РЕКЛАМА, СТАТУС

*Культура потребления – свойственный современному капиталистическому укладу тип культуры, в которой ценностно-смысловым ядром выступают материальные блага. Общество потребления – это характеристика нового общества, где все человеческие отношения утрачивают смысл, превращаясь в ритуальные схемы, знаки определения иерархического статуса или же вырождаясь в конкурентную борьбу. Этот новый уклад практически уничтожил старое, традиционное потребление, когда люди покупали какие-либо товары потому, что они были им нужны, потому что они удовлетворяли их потребности. Автор раскрывает историю развития, а также влияние общества потребления на индивида и экономическую и социальную жизнь общества в целом.*

The phrase «consumer society» means a set of social relations in which individual consumption plays a key role. Most often it is mentioned, describing the behavior of consumers of Western European society, which is ideal for imitation by Belarusians.

Initially, the «conservative» consumption model based on the consumption of goods satisfying basic human needs until their physical deterioration was historically characteristic [2]. In recent years, such a model is not used by the part of society that has achieved material well-being.

The economy development of the Western European world has passed three phases:

1) until the 18th century it was dominated by natural factors of production, the main among which was the fertility of the land;

2) 18th century - early 19th century - industrial economy was based on the results of the industrial revolution, combining natural factors of production results of technological progress;

3) since the mid – 19th century - awareness of the impact of consumer behavior on the course of economic processes. This awareness is associated with the following: the emergence of «fictitious goods» or «extra» goods in the early 80's-late 90's of the 19th century (only 30 % of goods meet basic human needs) [2]; the close intertwining of the economy with the culture of consumption, the manufacturer determines the tastes, desires, values, and shopping is a common form of spending free time; individualization of consumption: a person tends to consume in such a way as to meet the generally accepted standards, but not to merge with the mass.

Thus, consumption reflects the social characteristics of the consumer and is a demonstration of their social status and characteristics of their individual way of life; awareness of the role of advertising in the sale of goods and services as a derivative of the consumer's awareness of the importance of the acquired goods; communication transformations that have formed a new information space with qualitatively new properties; with the emergence of the frequency of change of fashion designs and collections and its distribution to most goods and services.

Over the past 40 years, personal spending on goods and services worldwide has more than quadrupled, from \$ 4.8 billion in 1960 to \$ 20 billion in 2000. [1] The consumer society is actively shifting to the East. According to the latest data, China has overtaken the US in the consumption of almost all major types of goods and raw materials (grain, meat, steel, coal, refrigerators, televisions, mobile phones, etc.), lagging behind only in oil consumption.

«Consumer society» has a negative impact on both the individual consumer and society as a whole. The main negative trends are:

1. The growth of consumer credit as a means of maintaining a constant growth in demand, and as a consequence, the reduction of the real sector of the economy in the structure of GDP to 10-15 %.



2. Irrational use of natural resources, including non-renewable, in order to satisfy non-existent human needs.

3. Substitution of basic spiritual needs with material values and distortion of the meaning of life in favor of artificially created, implanted values. The consumer society makes a person dependent, independent.

4. Consumer society is a source of desires and illusions for the majority of the population, especially those who are morally immature.

5. Consumption becomes the main goal of a person and the criterion of evaluation of other people. The processes of learning and work, including physical, go into the category of tools to achieve the goal, and becomes secondary.

6. The stratification of people in society, regions and countries into highly developed, supportive consumer societies and backward, used as a raw material appendage.

Thus, the priorities of the consumer market take away resources that can be used for other, more serious purposes without compromising the standard of living of people. These consequences acquire a special scope, transforming into wars (including virtual) for markets and resources along with social unrest of a «rich countries – poor countries» type.

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## IMPLEMENTATION OF THE INTEGRATED COMMUNICATIONS THEORY BY THE EXHIBITION COMPANY

### ИСПОЛЬЗОВАНИЕ КОНЦЕПЦИИ ИНТЕГРИРОВАННЫХ КОММУНИКАЦИЙ В ВЫСТАВОЧНОЙ КОМПАНИИ

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#### ABSTRACT

*INTEGRATED COMMUNICATIONS,  
EXHIBITION COMPANY, SPECIALISED  
EXHIBITION, EVENT MANAGEMENT*

*The article deals with the main stages of the international specialised exhibitions management; the mistakes having been made by the employees of the Exhibition Company «Belinterexpo» during the management of the international specialised exhibitions; and the advice on the improvement of the corporate integrated communications.*

#### АННОТАЦИЯ

*ИНТЕГРИРОВАННЫЕ КОММУНИКАЦИИ,  
ВЫСТАВОЧНАЯ КОМПАНИЯ, СПЕЦИАЛИЗИ-  
РОВАННАЯ ВЫСТАВКА, СОБЫТИЙНЫЙ МЕ-  
НЕДЖМЕНТ*

*В статье изложены основные этапы менеджмента международных специализированных выставок; ошибки, допущенные сотрудниками выставочной компании «Белинтерэкспо» в процессе менеджмента международных специализированных выставок; предложены эффективные рекомендации по совершенствованию корпоративной системы интегрированных коммуникаций.*

The importance of event management is undeniable in today's fast-changing business world [1, p. 83]. The international exhibitions are a powerful tool for promoting the image of the Republic of Belarus abroad and boosting its competitiveness on the international market [2, p. 143].

The object of the research is the integrated communications theory in the context of the international exhibition activities.

The subject of the research is the peculiarities of the integrated communications in the management of the specialised exhibitions organised by the Exhibition Company «Belinterexpo» – the Unitary Enterprise of the Belarusian Chamber of Commerce and

Industry (the BelCCI).

The goals of the research are 1) to determine the stages of the international specialised exhibitions management; 2) to identify the mistakes in the integrated communications implementation of the specialised exhibitions management by the Exhibition Company «Belinterexpo» of the BelCCI; 3) to provide effective solutions to correct those mistakes.

The stages of the event management of the specialised international exhibitions can be summarised in Table 1.

Table 1 – The Stages of the International Specialised Exhibitions Management

Stage	Stage Description
1. Event Idea & Approval	Generation of ideas
	Approval by the top management
2. Defining Date, Venue and Budget	Date setting
	Negotiations with the bases for the exhibition
	Realistic cost analysis formulation
3. Program Planning & Selection of Speakers	Planning of the business program
	Endorsement of the main speakers
	Endorsement of the subject-specific experts
4. Lists of Participants & Visitors	Creation of participants and visitors databases
5. Promotion of the Event	Search of the media to cover events
	Creation of printed advertising materials
6. Execution of the Event	Situational control
	Surveys implementation
7. Reconciliation of the Event	Event effectiveness evaluation
	Sharing the event results with the leadership
	Sharing the event results with the guests, visitors and participants

The results of the case analysis of the integrated communications in the specialised exhibitions management by the Exhibition Company «Belinterexpo» of the BelCCI can be summarised in Table 2.

Table 2 – Integrated Communications in the Event Management of the Specialised Exhibitions by Belinterexpo of the BelCCI: Mistakes and Effective Solutions

Mistakes	Effective Solutions
Mistake 1. Long meetings with no results	- define a precise agenda of a meeting
	- state time limits of a meeting
Mistake 2. No clear division of the employees' responsibilities	- delegate employees' responsibilities with no overlapping
Mistake 3. Poorly defined event ideas, or event concepts	- define event ideas (i.e. specialised exhibitions) clearly
Mistake 4. Poorly formulated event target audience	- conduct proper marketing research
	- define the event target audience clearly
Mistake 5. No electronic system of Customer Relationship Management (CRM)	- implement a CRM-system
Mistake 6. No e-mail distribution service	- implement the e-mail distribution service like MailChimp
Mistake 7. No service for the company's employees to revise files simultaneously	- use services like Google Docs to create and revise files simultaneously
Mistake 8. This website may be hacked (Figure 1)	- change the website or come up with a new one
Mistake 9. The event failure reasons are not analysed	- implement the event failure analysis

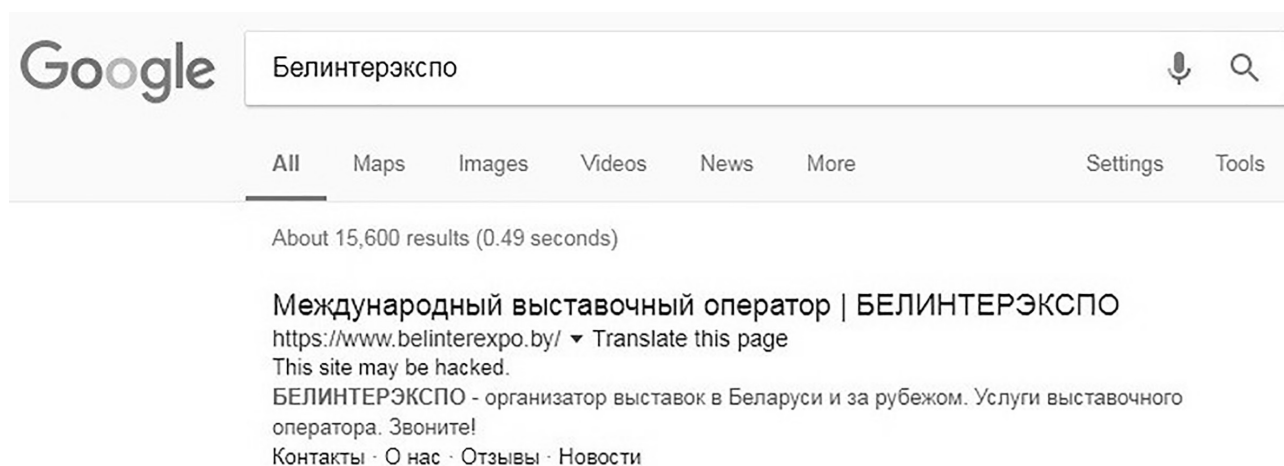


Figure 1 – Message «This website may be hacked»

«This site may be hacked» is the message under the first link to the corporate website of the Exhibition Company «Belinterexpo» in Google, which appears when a search engine thinks that hackers have changed the content of the website or added their own information to it; and having visited this website, users may suffer from the harmful software.

Newness of the research is that for the first time the peculiarities of organising and holding the international specialised exhibition in the Republic of Belarus have been analysed.

The area of application: the algorithm of organising and holding the international specialised exhibitions can be used by the specialists of the exhibition companies to improve corporate integrated communications system.

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UDC 378.4

## THE USE OF ONLINE VIDEOS FOR TEACHING FOREIGN LANGUAGE

## ИСПОЛЬЗОВАНИЕ ОНЛАЙН ВИДЕО В ОБУЧЕНИИ ИНОСТРАННОМУ ЯЗЫКУ

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### ABSTRACT

*YOUTUBE, WEBSITES, AUTHENTIC VIDEOS,  
ONLINE MATERIALS, BLOGGERS*

### АННОТАЦИЯ

*YOUTUBE, ВЕБ-САЙТЫ, АУТЕНТИЧНЫЕ  
ВИДЕО, БЛОГГЕРЫ*

*The article deals with an important role of different YouTube videos in teaching foreign language. Videos are considered as a source of online materials that can be very helpful in the teaching and learning field. YouTube can play a significant role in helping students to improve their professional knowledge of the foreign language, advance their understanding of English. YouTube videos are one of the means of teaching profession-oriented communication.*

*В статье рассматривается использование различных видео, размещенных на канале YouTube, в процессе обучения иностранному языку. Видео воспринимается, как источник онлайн материалов, которые играют важнейшую роль в преподавании. Данные видео помогают студентам улучшить их профессиональные знания в иностранном языке, усовершенствовать понимание английского языка. Онлайн материалы являются одним из средств обучения профессионально-ориентированному общению.*

The society we live in puts forward new demands for teaching students of non-linguistic departments. Nowadays it is very important to know different foreign languages. Young people will meet difficulties in mastering their profession thoroughly without foreign language knowledge, because the world constantly changes and brings a lot of interesting new things expressed in English. The English language allows to read and use all these new facts in different professions thus allowing students to get a better position in future. To meet the requirements of our society the universities and teaching staff should turn to various types of work on seminars and lectures.

The life of 21st century students in Belarus, similar to many other countries, both inside and outside the classroom, is saturated with technology. Therefore, it seems important that contemporary tutors know how to use digital tools in education. One of the media that plays an important role nowadays is videos, because they are such a common feature of students' everyday lives.

Currently, being one of the most popular multimodal texts, video can be a useful source for foreign language lecturers who aim to develop students' language skills of speaking, listening, reading, and writing. Foreign language teachers may find a range of educational opportunities that videos can bring into their classrooms. Thus, videos can promote students' critical thinking and motivate them to express their opinions in a foreign language.

L. Vygotsky, A. Leontiev, Z. Tsvetkova, I. Tsaturova, I. Kirillova, V. Pavlova etc. studied the problem of using video and audio in one or another way. N. Zhinkina, I. Zimnyaya, O. Gromova, G. Mialaret paid attention to psychological side of this aspect. K. Karpova, M. Lyahovitskiy, N. Kasatkina, I. Koshman, I. Komkov, I. Salistra wrote about the methodology of using technological means in teaching foreign language. We should mention the articles

and books written by M. Allen, M. Brandi, D. Buckingham, C. Compte, R. Cooper, D. Gericke-Schönhagen, J. Golden, N. Ishihara, T. Lancien, M. Lavery, J. Lonergan, F. McNight, M. Ruan, S. Stempleski, E. Summerfield.

A lot of monographs and articles devoted to the problems of teaching students of non-linguistic specialities are known (N. Almazova, M. Akopova, S. Veledinskaya, L. Golikova, T. Graboy, M. Evdokimova, G. A. Krasnoshchekova, N. Nechaev, G. Reznitskaya; G. A. Petrova, E. Sokolova, L. Yarotskaya etc.). The authors offer various ways to improve the quality of education. However, some questions related to teaching foreign languages of non-linguistic students in groups with multi-level language training can not be recognized as finally solved. The priority and dominance of special disciplines, a limited number of hours, and lack of textbooks make it difficult to solve all methodological problems associated with improving the quality of students' language training. We can say this problem is very relevant nowadays.

Teaching with video can have a lot of advantages:

1. Watching video students would usually not be exposed to conscious attention to language form.

2. Watching videos they develop their second language the way children develop their native language: they listen to the speech of native speakers in a context, while grammar rules with examples of language use are removed from the context.

3. Videos can be useful in stimulating unpredictable or unexpected topics. Students can see different issues raised by a video, discuss them and perceive the whole situation as real learning.

In communication promoted by video, language becomes more free and natural because attention is on the meaning of the communication rather than its form. Such a natural language learning situation can help pupils acquire a foreign language instead of learning it.

We should emphasize that videos attract students' attention, focus their concentration, generate interest in class, energize or relax them for learning exercises, improve attitudes toward learning, increase understanding, foster creativity, stimulate the flow of ideas, provide an opportunity for freedom of expression, inspire and motivate students, make learning fun. In addition, videos that are produced in the country of the foreign language provide viewers with authenticity. It is the main point.

Teaching foreign languages at Technical University plays a very significant part in future specialists' preparation. According to I.A. Tsaturova, the aim of teaching foreign language at any Technical University is to create conditions for developing skills that are necessary for foreign activity, for obtaining foreign experience in different fields of science and technology, for professional communication [1].

The success of teaching depends on the quality of videos. The main condition is to use

authentic texts. It will help to organize the teaching process in an effective way. We claim the following:

1. Authentic video dialogues and monologues are a unique and effective means of developing and improving students' communicative competence, as they are examples of real speech (different accents, the manner and styles of speech behavior).

2. The dialogue and monologue nature of authentic audio or video represents a well-known methodological difficulty for using in foreign language teaching, and at the same time, it is the most effective for the development of students' communicative competence.

3. The method of forming communicative competence of students using authentic audio dialogues or monologues should contain not only exercises and assignments for their perception taking into account all the difficulties of this process (noise, fuzzy pronunciation, interrupting, etc.), but also exercises and assignments, ensuring the assimilation of patterns of speakers' speech behavior.

4. Regular use of authentic video dialogues or monologues, starting from the first year studying at the university, constant updating with relevant materials, improving the exercise system guarantee the success of teaching foreign language, as a result of which students become full participants in foreign language communication.

In fact, technology can offer learners many online materials, such as websites for learning, and provide them an incredible source of information. However, there are a significant number of online materials that can be integrated into traditional English lessons, such as the YouTube website. YouTube is considered a source of online materials that can play a key role in the teaching and learning field. It has become more popular with people, particularly among adults. This website can provide students with everyday videos and authentic situations that may help them improve their understanding and performance in English language lessons. In addition, it is likely to make the learning process more fun and meaningful. Furthermore, it gives students the opportunity to memorize their lessons more easily. Finally, using YouTube clips in the classroom will give learners the chance to study outside class and assist them in understanding English. Another goal is using YouTube videos to develop communication between students and provide them with authentic situations and conversations to gain better understanding of their lessons.

It can be extremely useful to use YouTube materials at any Technical University. First of all, this website is free-of-charge and easy to use. Thus, many language tutors can use the website's videos to teach English. YouTube has become one of the most-popular websites in the world. Many students around the world like language videos, and many clips have been viewed millions of times. According to students' speciality, teachers can choose different video materials. For example, for design students YouTube provides a lot of information (bloggers' video, news in the world of fashion, fashion weeks reviews, popular designers' interviews and advice etc.; for finance students you can choose economic news,



bloggers' information about economics, famous financiers' monologues and opinions, their predictions about future crises and etc.).

So, by using YouTube videos, students can gain a considerable number of advantages and motivations that make the learning process active. In addition, it may offer teachers a chance to overcome a number of negative concerns and involve learners in a new method of teaching. Furthermore, it can be a helpful tool for tutors to use in their lessons.

We think that the use of YouTube in teaching the English language plays a leading role in helping learners understand their English lessons. It can improve the performance of students and upgrade their levels in English courses. In other words, YouTube presented a substantial influence on students' understanding of English. It is considered to be more effective and successful than textbook-based English courses in promoting better learning of English.

To sum up, technology is an essential part of the educational world and, if used properly, can effectively promote successful language acquisition. It is important for every language tutor to be able to integrate video technology in the classroom routine and language learning activities. Lecturers should also select videos that are relevant to the current educational objectives and their students' needs and interests. Selecting the right material is crucial because it has a profound effect on students' participation, as well as inspiration, concentration and motivation.

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JEL codes: A29, I29, J24

## DEVELOPMENT OF FURTHER PROFESSIONAL EDUCATION IN ECONOMY AND MANAGEMENT<sup>1</sup>

## РАЗВИТИЕ ДОПОЛНИТЕЛЬНОГО ПРОФЕССИОНАЛЬНОГО ОБРАЗОВАНИЯ В СФЕРЕ ЭКОНОМИКИ И МЕНЕДЖМЕНТА

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### ABSTRACT

*FURTHER PROFESSIONAL EDUCATION,  
MBA PROGRAMS, PROFESSIONAL  
RETRAINING, PROFESSIONAL DEVELOPMENT,  
JOB SATISFACTION*

*Modern labour market is changing rapidly and consequently requirements towards employees, their professional knowledge, qualification and skills, personal qualities and management competences modify permanently. Facing these challenges the system of professional education is transforming from the previous one into «Life-long Learning». As the author's studies certify the programs of qualification improvement, professional retraining, Master of Business Administration, that are realized nowadays promote labour market balance and harmonization, workers competitiveness, wages growth and improvement of job satisfaction.*

### АННОТАЦИЯ

*ДОПОЛНИТЕЛЬНОЕ ПРОФЕССИОНАЛЬНОЕ  
ОБРАЗОВАНИЕ, ПРОГРАММЫ «МАСТЕР ДЕЛО-  
ВОГО АДМИНИСТРИРОВАНИЯ», ПРОФЕССИО-  
НАЛЬНАЯ ПЕРЕПОДГОТОВКА, ПРОФЕССИОНАЛЬ-  
НОЕ РАЗВИТИЕ, УДОВЛЕТВОРЕННОСТЬ ТРУДОМ*

*Современный рынок труда стремительно меняет требования к работнику, его профессиональным знаниям и навыкам, личностным качествам и управленческим компетенциям. Отвечая на эти вызовы, система профессионального образования трансформируется в модель «обучение длиною в жизнь». Реализуемые в настоящее время программы повышения квалификации, профессиональной переподготовки, MBA, как показывают исследования автора, способствуют гармонизации рынка труда, усилению конкурентоспособности работников, росту зарплаток и повышению удовлетворенности трудом.*

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The world is experiencing a boom in further professional education. An increasing share of the population participating in further professional education programs demonstrates that lifelong learning is becoming the norm. This process has a profound background from theoretical, socio-economic and technological points. Labour economics provides us with the concepts of human capital and educational signals that both support the idea of positive influence of professional education and training on employee's wages and competitiveness on labour market. Professional education is consequently considered as a «social lift» supporting individual's penetration into the new spheres of labour activities followed by welfare growth. New technologies have a double effect on further professional education. On the one hand they push the workers towards retraining «to fill the gap» between old and new skills, on the other – information technologies provide scholars and teachers with new methods of modern knowledge distribution: distant educational courses and retraining programs become more and more popular all over the world.

In Russia, the profound system of further professional education was formed in the first half of the 20th century, as the professional mobility at that time was rather low, it was oriented mainly on qualification growth in the frameworks of one profession but the refreshment of knowledge and skills according to existed standards was mandatory for many professional groups. In 1990-s the radical changes in the society and economy involved the decrease of the amount of enterprises and organizations that were able to finance the system of qualification growth while those people who urgently needed additional or completely new professional knowledge and skills form the individual demand for further professional education. The supply of this type of education was provided by different educational institutions including universities.

So, nowadays we complain that out of approximately 75 mln people in the labour force in Russia only 16 thous. people annually improve their qualification on the job places in industry [1]. But at the same time about 1.4 million people annually use the educational services of various departments of further professional education: professional development, professional development in the form of internship, professional retraining [2]. The Federal law «On education in the Russian Federation» regulates further professional education sphere. As indicated in this law, further professional education is aimed at meeting educational and professional needs, professional development of individuals, ensure that their qualifications correspond with changing conditions of professional activities and social environment [3]. As can be seen from this law, further professional education is realized through the professional development programs ranging from 16 to 250 hours and professional retraining programs, which provide their graduates with different types of certificates depending on the amount of hours in curricular.

The Russian Federation is now oriented on achieving ambitious goals – creating millions of modern job places, increasing labour productivity and economic growth – that

is impossible to fulfil without investments in human capital. For the implementation and systematization of the tasks the Russian Agency for Strategic Initiatives drew a roadmap for «creating a National system of competences and qualifications». It is evident that the most mobile form of professional education that is able to adjust rapidly and adequately to the new professional standards is further professional education. According to the results of the study of the European Center for the Development of Vocational Education, the increase of the number of training days by 1 % leads to the increase of worker's productivity by 3 % [4]. Moreover, the European Center had shown that the maintenance of knowledge and skills at a high level increases the productivity of the worker and also of the company as a whole, reduces unemployment, increases wages, encourages internal and external investment.

One of the most progressive forms of corporate training today is a corporate university. Corporate universities began to appear in Russia since 1999. The first of these is the University «Beeline», created by the company «VimpelCom». It was active in developing its sphere of influence, a network of suppliers and service providers. To capture the market the specialists were required who understood not only the fundamentals of business, but company policy. Currently, in the framework of University «Beeline» has more than 260 local trainers and 30 people organize the learning process in the company [5]. It should be noted that the process of teaching adults has its own characteristics: they need to know exactly what they must learn and for what purpose. The most effective training will be if it takes into account the real needs and has an applied, practical nature.

The Faculty of Economics of Lomonosov Moscow State University has successfully implemented further professional education programs for more than 15 years. In January-April 2016, a survey was conducted among the graduates of the «Master of Business Administration (MBA)», which received 250 questionnaires and showed that the following:

- more than 65 % of the program graduates have noted an increase in their income after completing the program;
- about 57 % of graduates made the transition from operating positions to the managerial;
- almost 79 % of graduates increased job satisfaction.

The data shows a direct relationship between receiving further professional education and career and professional growth of alumni. It should be noted that among the respondents were graduates of 2008-2009, which despite the crisis noted improvement in their employment positions [6]. The Faculty of Economics of Lomonosov Moscow State University also held several researches on the MBA programs alumni and found out that 98 % of alumni have found a new job with higher salary and their job satisfaction has increased [7]. The results of the reviewed studies confirm the thesis that further professional education has a positive effect on the career of the individual, and can therefore be considered as a tool of harmonization of relations between labor market and education market.

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## RESUME TYPES

## ТИПЫ РЕЗЮМЕ

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### ABSTRACT

*RESUME, SUMMARY OF EDUCATION, WORK EXPERIENCE, SKILLS, ACHIEVEMENTS, KEYWORDS*

*This paper is of scientific interest in the study of modern resume. The work considers in detail the features of the*

### АННОТАЦИЯ

*РЕЗЮМЕ, ОБРАЗОВАНИЕ, ОПЫТ РАБОТЫ, ОСНОВНЫЕ ДОСТИЖЕНИЯ, КЛЮЧЕВЫЕ СЛОВА*

*В данной статье с научной точки зрения исследуется природа современного резюме. В работе детально рассматри-*

*resume and their specific using. Making up a professional resume, you need to use keywords to make an advertisement resume. The choice of a specific type of resume depends on the position claimed by the applicant. Everyone knows that to apply for a job you need a competent resume. And in order to compile it correctly, you must first learn what resume is as a genre and type of text.*

*ваются особенности различных типов резюме и специфика их использования. Профессиональное резюме должно включать ключевые слова, чтобы в последующем служить рекламой соискателя. Выбор типа резюме зависит от должности, заявленной соискателем. Для удачного собеседования необходимо иметь компетентно составленное резюме. Для правильного составления резюме необходимо понимание того, что резюме – это особый жанр и тип текста.*

## INTRODUCTION

A resume is a written compilation of your education, work experience, credentials, and accomplishments. Most professional positions require applicants to submit a resume and cover letter as part of the application process.

Your resume is the first document a hiring manager will look at when reviewing your application, and therefore is a true «first impression». Accordingly, it's important to put time and effort into developing and maintaining an updated, accurate resume.

You should think about a resume as «self-advertisement» that sums up your experience on one page. Your resume is one of the most important pieces of your job application. It gives the hiring manager an overview of the qualifications you have for the job for which you're applying. A resume is typically sent with a cover letter, which is a document that provides additional information on your skills and experience in letter form [1].

### **Thinking about your experience**

An impressive resume lays out a summary of qualifications that will push the hiring manager or employer to move forward and invite you to interview for the position.

Besides details on skills, education, and work history, resumes can also have optional sections, such as an objective, summary statement, skills, or career highlights. Those sections can be added after you've compiled all the factual information you need to list on your resume.

Resume can be helpful to sit down with a pen and paper, or a blank Word document, and jot down their work history from start to finish. of course, if you have been in the workforce for many years, this is not going to be time-efficient, so you may choose to focus on your most prominent and relevant positions [2].

### **Concentrate on Your Achievements**

According to the writing the descriptions for the jobs you've held, focus on what you

accomplished in each position rather than what you did. Listing quantifiable achievements in a numerical manner (increased sales 20 %, reduced expenses by 10 %, for example) will help your resume stand out. Be sure to match those accomplishments to the criteria the employer is seeking in the job posting [3].

## TYPOLOGY OF A RESUME

### **Thinking about a Resume Style**

There are several basic types of resumes used to apply for job openings. Before you spend time writing up all the details around each position you've had, you should decide what style of resume to use, as that can affect how you describe, organize, and list your experience, education, skills, qualifications, and other credentials for employment.

#### 1. A chronological resume.

It starts by listing your work history, with the most recent position listed first. Below your most recent job, you list your other jobs in reverse chronological order. Employers typically prefer this type of resume because it's easy to see what jobs you have held and when you have worked at them. This is the most common resume type.

This resume works well for job seekers with a strong, solid work history. If you are starting your career, or if you are changing career fields, you might consider a different resume type.

#### 2. A functional resume.

It focuses on your skills and experience, rather than on your chronological work history. Instead of having a «work history» section at the top of your resume, you might have a «professional experience» or «accomplishments» section that lists various skills you have developed over the years.

A functional resume also sometimes includes a resume summary or headline at the top, which details a person's skills and achievements. A functional resume might not include one's employment history at all or might have a concise list of work history at the bottom of the resume.

This type of resume is used most often by people who are changing careers or who have gaps in their employment history. It is also useful for people who are new to the workforce, have limited work experience, or who have a gap in their employment. By highlighting skills rather than work history, one can emphasize that he or she is qualified for the job.

#### 3. A combination resume.

It is a mix between a chronological resume and a functional resume. At the top of the resume is a list of one's skills and qualifications. Below this is one's chronological work history. However, the work history is not the focus of the resume and typically does not take up much space on the resume.

Using this type of resume, you can highlight the skills you have that are relevant to the

job you are applying for, as well as provide your chronological work history. After all, most employers want to see your chronological work history, even if that history is not very extensive. This type of resume helps you highlight what makes you the best fit for the job, while still giving the employer all the information he or she wants.

#### 4. A targeted resume.

It is a resume that is customized to specifically highlight the experience and skills you have that are relevant to the job you are applying for. It takes more work to write a targeted resume than to click to apply with your existing resume. However, it's well worth the effort, especially when applying for jobs that are a perfect match for your qualifications and experience [4].

#### CONCLUSION

So if you want to write a good resume you should know what a resume is, what types of a resume are and use the most important tips for writing your resume. Start by mining your life experience and academic achievements to show that you'll be an asset to the company. Because resume is a big chance to advertise yourself and find a good job.

To write a profit-making resume, you must work through each section of the resume. View and analyze all your skills and achievements, think over what will be more profitable to look at the foreground of the resume. It is necessary to work out every step when writing the correct resume. Do not neglect sections, which at first glance seem unnecessary. After all, every word in the resume may or may not help you get a job.

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## RFM-ANALYSIS AS A MARKETING POLICY PLANNING TOOL

### RFM-АНАЛИЗ КАК ИНСТРУМЕНТ ПЛАНИРОВАНИЯ МАРКЕТИНГОВОЙ ПОЛИТИКИ

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#### ABSTRACT

*SPSS STATISTICS, MARKETING RESEARCH, FREQUENCY ANALYSIS, RFM ANALYSIS CUSTOMER SEGMENTATION*

*The article examines the possibilities of the SPSS STATISTICS package for conducting market research. Along with classical methods of statistical analysis, the possibilities of the Direct Marketing tool are explored.*

#### АННОТАЦИЯ

*SPSS STATISTICS, МАРКЕТИНГОВЫЕ ИССЛЕДОВАНИЯ, ЧАСТОТНЫЙ АНАЛИЗ, RFM-АНАЛИЗ, СЕГМЕНТАЦИЯ КЛИЕНТОВ*

*В статье рассматриваются возможности пакета SPSS STATISTICS для проведения маркетинговых исследований. Наряду с классическими методами статистического анализа исследованы возможности инструмента «прямой маркетинг».*

Any marketing research is carried out, first of all, to study the competitiveness of goods and services, attract new and retain old customers. It significantly accelerates and optimizes this process using modern computer technologies and specialized packages for statistical data processing.

In carrying out this study, the results of a survey of fifty respondents were used as input data for the analysis in order to identify preferences in the selection of juices produced by the Republic of Belarus. A fragment of the table with the initial data placed in the SPSS STATISTICS environment is shown in Figure 1.

Computer program for statistical data processing SPSS STATISTICS is one of the market leaders in the field of commercial statistical products. A feature of the latest versions of this package is the availability of a special tool «Direct Marketing». Along with the classical methods of statistical analysis built into SPSS Statistics, this toolkit combines the methods of marketing research that allow to form a better understanding of existing and potential customers, and methods aimed at increasing the effectiveness of marketing companies.

	Имя	...	Тип	Ширина	Метка
1	вопрос1	0	Числовой	8	Как часто вы покупаете сок?
2	вопрос2	0	Числовой	8	Где чаще покупаете соки
3	вопрос3	0	Числовой	8	Какой объём упаковки Вам удомнее всего покупать и
4	вопрос4	0	Числовой	8	Соки с какими вкусами предпочитаете?
5	вопрос5	0	Числовой	8	В каких упаковках Вам нравится потреблять соки?
6	вопрос6	0	Числовой	8	Для кого покупаете соки?
7	вопрос7	0	Числовой	8	На что обращаете внимание при выборе и покупке со
8	вопрос8	0	Числовой	8	Какие марки сока Вы знаете?
9	вопрос9	0	Числовой	8	Соки каких марок Вы покупаете?
10	вопрос10	0	Числовой	8	По какой причине Вы покупаете сок?

Figure 1 – The data for frequency analysis

Methods aimed at better understanding customers include customer identification (RFM analysis), customer segmentation (clustering), and creating customer profiles that responded to offers.

In the course of research on certain questions of the questionnaire, statistically significant patterns were revealed, statistical distributions of response variants were determined, and proximity to the normal distribution law was estimated. Thus, during the frequency analysis, descriptive statistics of numerical variables with graphical interpretation of the frequency distribution results was obtained. For example, the question «How often do you buy juice?» was answered by the majority of the respondents (43.8 %) as 1-3 times a month, the rest of the votes were distributed equally among the answers: 18.8 % between answers: more often than once a week, once a week, less than once a month. Thus, the results obtained during the frequency analysis, revealed the preferences of customers in the frequency and place of purchase of juices, as well as in the desired amount of packaging.

For a more detailed understanding of the planning and marketing policy RFM-analysis was held, which is based on customer segmentation technique, based on their behavior. This type of analysis is based on three components: Recency (R) – the prescription, the amount of time from the previous purchase, Frequency (F) – frequency, the total number of purchases, Monetary (M) – money, the total amount of purchases. Therefore, when carrying out this type of analysis, it was necessary to include in the set of initial data the information on the number of transactions and the amounts of payments of each customer: the number or other unique customer ID, the last order for each customer, the total number of customer transactions, the total amount of money received from the client.

As a result of the RFM-analysis, a table of the number of observations in groups, diagrams and histograms of RFM was obtained (Figures 2, 3).

Количество наблюдений в группах по недавности, частоте и деньгам

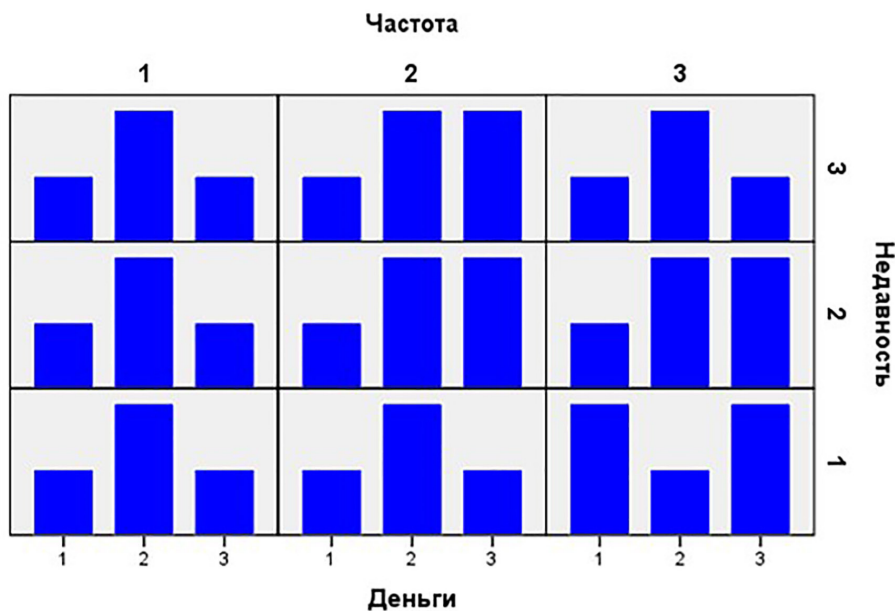


Figure 2 – RFM diagram

Гистограммы RFM

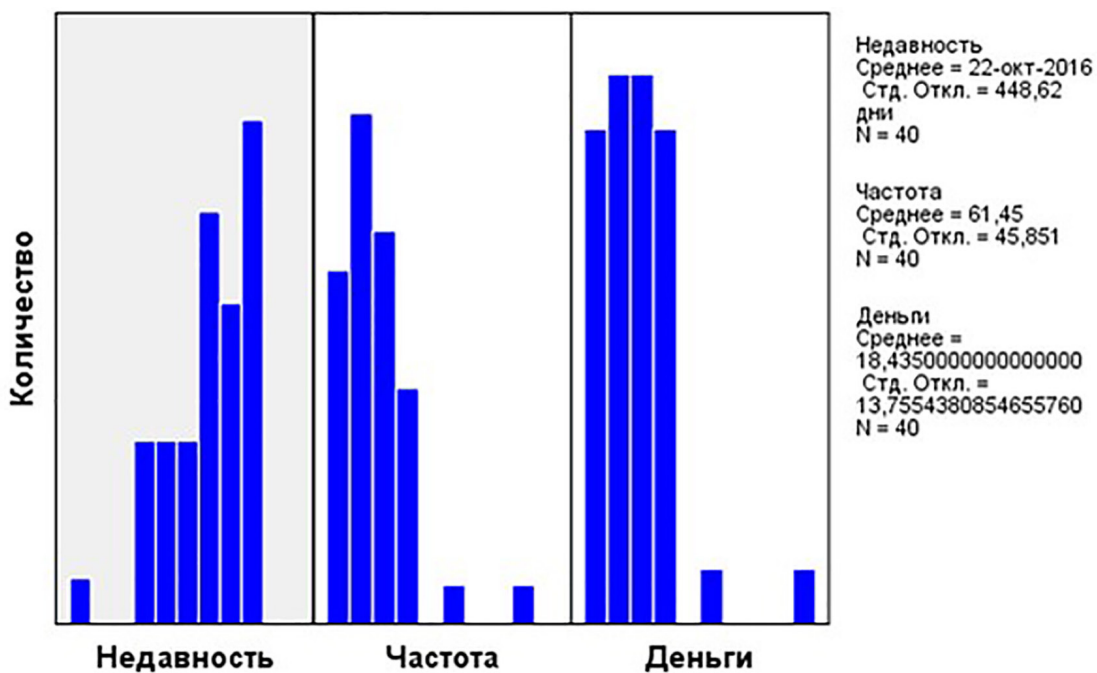


Figure 3 – RFM histogram

Thus, the diagram of the number of observations in groups (Figure 2) displays the distribution by groups for the chosen grouping method. Each column represents the number of clients to which each combined RFM score will be assigned. The goal of marketing policy should be a fairly even distribution with all or most columns with approximately the same height. But in reality there is always a certain variation in the results, which should be minimized by changing the initial parameters of the RFM analysis. The histogram (Fig. 3) shows the relative distribution of values for the three fields used to calculate estimates of recency, frequency, and money.

The analysis of the obtained results makes it possible to develop an action plan with the aim of changing the marketing policy of the trade enterprises, strengthening such areas as increasing the percentage of retained customers, increasing the response rate, increasing the conversion percentage, and increasing income.

Thus, the analyzed analysis methods in the SPSS Statistics environment can be used to better understand the behavior of clients, whether in retail, e-commerce, distribution or other commercial sectors. And RFM analysis is a relatively easy to understand modeling process and an excellent starting point for finding additional interesting ways of applying in-company technologies for in-depth data analysis and predictive analytics.

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## RESEARCH OF ECONOMETRIC MODELS FOR CREATION OF EXPECTED VALUES

### ИССЛЕДОВАНИЕ ЭКОНОМЕТРИЧЕСКИХ МОДЕЛЕЙ ДЛЯ ПОСТРОЕНИЯ ПРОГНОЗНЫХ ЗНАЧЕНИЙ

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#### ABSTRACT

*CORRELATION, REGRESSION, MODEL, EQUATIONS, CORRELATION FIELD*

*Econometric analysis on the basis of data on profit from sales (result) and the volume of sales (factor) allows us to study the internal structure of the models, which in turn allows us to correctly and accurately predict the (future) values of economic indicators.*

#### АННОТАЦИЯ

*КОРРЕЛЯЦИЯ, РЕГРЕССИЯ, МОДЕЛЬ, УРАВНЕНИЯ, КОРРЕЛЯЦИОННОЕ ПОЛЕ*

*Проведение эконометрического анализа на основе данных о прибыли от реализации продукции (результат) и об объемах реализованной продукции (фактор) позволяет исследовать внутреннюю структуру моделей, что в свою очередь позволяет правильно и точно спрогнозировать значения экономических показателей.*

The purpose of this work is to study the relationship of economic indicators and the development of econometric models using computer technology to predict profits from sales.

Tools of the study is TP MS Excel.

Correlation analysis is a section of mathematical statistics devoted to the study of relationships between random variables. The main task of correlation analysis is to establish the nature and closeness of the relationship between the effective (dependent) and factor (independent) indicators (signs) in this phenomenon or process.

The nature of the relationship between the indicators of sales of a small enterprise for women's clothing is determined by the correlation field. For the analysis, the volume and profit from the sold products are considered. The selected indicators are significant for the company in today's competitive environment. In the model  $Y$  is a dependent

sign (profit from sales, thousand rubles), and  $X$  is an independent sign (volume of sales, thousand rubles), then noting each case  $X(i)$  with coordinates  $x_i$  and  $y_i$ , a correlation field is constructed, which is shown in figure 1.

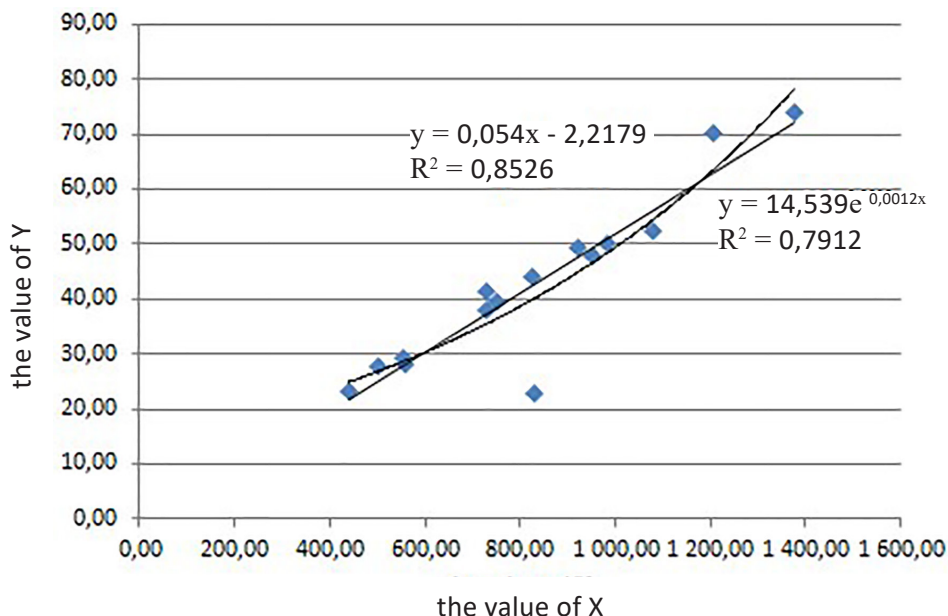


Figure 1 – Correlation field of dependence  $Y$  on  $X$  (linear and exponential relationship)

The presence or absence of a connection between the studied parameters is determined by the correlation coefficient ( $R_{xy}$ ), which in turn allows from a practical point of view to confirm or refute the previously stated, on the correlation field, theoretical hypotheses.

The calculation method assumes that the correlation coefficient lies in the range from minus one to plus one  $[-1;+1]$  («-» says about available feedback, and «+» – direct ties). To establish a statistical relationship between the studied economic indicators and the factors affecting it, a regression analysis was carried out.

Regression analysis involves the identification of explanatory variables, specification of the form of the desired relationship between variables, determination and evaluation of specific numerical values of the parameters of the regression equation (regression model). Regression analysis aims to derive, define (identify) the regression equation, including statistical evaluation of its parameters. The regression model allows you to find the value of the dependent variable if the value of the independent or independent variables is known.

To research and build predictive values of the selected econometric models such as linear ( $y = b + m \times x$ ) and the exponentia ( $y = b \times m^x$ ). These models allow you to present a predictive calculation in the form of clear and accessible functional dependencies. The values and proportions of the equation parameters also allow to estimate the forecast

accuracy and dependence of the studied values. The analysis of statistical estimates of parameters of econometric models are presented in tables 1 and 2.

Table 1 – Estimation of linear model parameters ( $y = b + m \times x$ )

Parameters	Linear model $y = -2,218 + 0,054 \times x$	Analysis of statistical estimates of parameters regression model
$R_{XY}$	0,92	Communication between the X and Y straight line, strong. As Y substantially depends from X, linear model will be under construction taking into account this factor
m	0,054	Regression coefficient. At increase in X on 1 Y will increase by 0,054 thousand rubles
b	-2,218	Coefficient of regression model
$R^2$	0,853	Determination coefficient. The model is adequate The result for 85,3 % depends on a factor
$F_{\text{расч}}$	75,224	Calculated value of criterion of Fischer $F_{\text{расч}} > F_{\text{табл}}$ – model is significant
$F_{\text{табл}}$	4,667	Tabular value of criterion of Fischer
$d_f$	13	Quantity of degrees of freedom of regression model

Figure 2 shows the graphs of actual and projected values of profit from the sale of products obtained using the studied econometric models. The forecast values are calculated on the basis of the values of the relationship of the studied indicators for the period 2003-2017. The initial data were obtained at the end of the year.

As a result of the analysis of two econometric models – linear and exponential, it is determined that between the studied indicators, namely the profit from the sale of products and the volume of sales there is a very strong and direct relationship ( $R_{XY} = 0,92$ ).

The models under study are adequate because their determination coefficients are greater than 0,7 ( $R^2 = 0,853$  in the linear model and  $R^2 = 0,791$  in the exponential model) and both can be used for prediction. But it is necessary to take into account to a greater extent the forecast made by the linear model, since the value of the coefficient of determination, in this case, is higher than that of the exponential model.

The results of the analysis of econometric models are provided to specialists of the enterprise for work and are used in the study of this topic by students of economic specialties.

Table 2 – Estimation of exponential model parameters ( $y = b \times m^x$ )

Parameters	Exponential model $y = 14,539 \times 1,001^x$	Analysis of statistical estimates of parameters regression model
$R_{XY}$	0,92	Communication between X and Y straight line, strong. As Y substantially depends on X, exponential model will be under construction taking into account this factor
m	1,001	Regression coefficient. At increase in X on 1 Y will increase by 1,001 thousand rubles
b	14,539	Coefficient of regression model
$R^2$	0,791	Determination coefficient The model is adequate. The result for 79,1 % depends on a factor
$F_{расч}$	49,256	Calculated value of criterion of Fischer $F_{расч} > F_{табл}$ – model is significant
$F_{табл}$	4,667	Tabular value of criterion of Fischer
$d_f$	13	Quantity of degrees of freedom of regression model

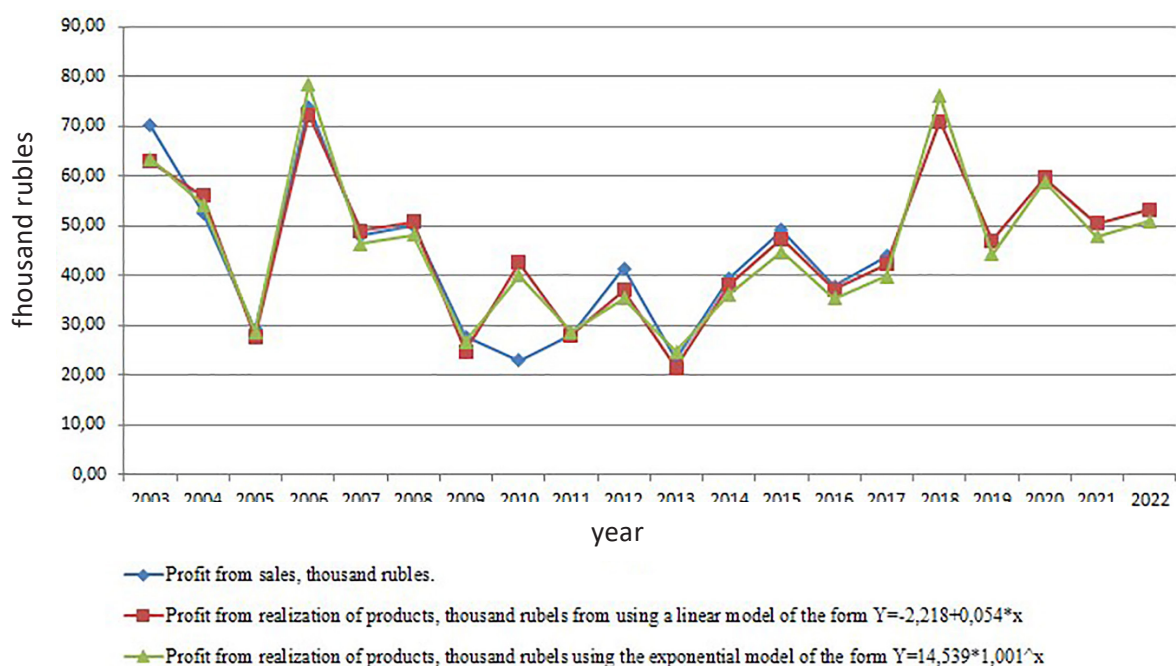


Figure 2 – Actual and expected values of profit on product sales



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## ANALYSIS OF READING ACTIVITIES AS A SUBJECT FOR TEST DESIGN

## АНАЛИЗ ЧТЕНИЯ КАК ОБЪЕКТА ТЕСТИРОВАНИЯ

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### ABSTRACT

*VISUAL AND AUDITORY MEDIA, BOTTOM-UP (TOP-DOWN) STRATEGIES, GENRE, SCHEMATA, READING PERFORMANCE*

*The article considers reading as an essential part of learning a foreign language. The role of text in terms of its style and genre is analyzed. The classification of reading performance as a subject of test design is presented.*

### АННОТАЦИЯ

*ВИЗУАЛЬНЫЕ И АУДИОСРЕДСТВА, СТРАТЕГИИ «ОТ ЧАСТНОГО К ОБЩЕМУ» («ОТ ОБЩЕГО К ЧАСТНОМУ»), ЖАНР, СТРУКТУРА ТЕКСТА, РЕЗУЛЬТАТИВНОСТЬ ЧТЕНИЯ*

*В статье рассматривается процесс чтения как неотъемлемая часть деятельности по изучению иностранного языка. Представлен анализ текста по стилистической и жанровой составляющим. Предложена классификация результативности чтения как критерия, учитываемого при составлении тестов.*

Even as we are bombarded with an unending supply of visual and auditory media, the written word continues in its function to convey information, to amuse and entertain us, to codify our social, economic, and legal conventions, and to fulfill a host of other functions, in literate societies, most «normal» children learn to read by the age of five or six, and some even earlier. With the exception of a small number of people with learning disabilities, reading is a skill that is taken for granted.

In foreign language learning, reading is likewise a skill that teachers simply expect learners to acquire. Basic, beginning-level textbooks in a foreign language presuppose a student's reading ability if only because it's a book that is the medium. Most formal tests use the written word as a stimulus for test-taker response; even oral interviews may require reading performance for certain tasks. Reading, arguably the most essential skill for success in all educational contexts, remains a skill of paramount importance as we create assessments of general language ability.

Is reading so natural and normal that learners should simply be exposed to written texts with no particular instruction? Will they just absorb the skills necessary to convert their perception of a handful of letters into meaningful chunks of information? Not necessarily. For learners of English, two primary hurdles must be cleared in order to become efficient readers. First, they need to be able to master fundamental bottom-up strategies for processing separate letters, words, and phrases, as well as top-down, conceptually driven strategies for comprehension. Second, as part of that top-down approach, second language readers must develop appropriate content and formal schemata – background information and cultural experience – to learn out those interpretations effectively.

The assessment of reading ability does not end with the measurement of comprehension. Strategic pathways to full understanding are often important factors to include in assessing learners, especially in the case of most classroom assessments that are formative in nature. An inability to comprehend may thus be traced to a need to enhance a test-taker's strategies for achieving ultimate comprehension. For example, an academic technical report may be comprehensible to a student at the sentence level, but if the learner has not exercised certain strategies for noting the discourse conventions of that genre, misunderstanding may occur.

As we consider a number of different types or genres of written texts, the components of reading ability, and specific tasks that are commonly used in the assessment of reading, let's not forget the unobservable nature of reading. Like listening, one cannot see the process of reading, nor can one observe a specific product of reading. Other than observing a reader's eye movements and page turning, there is no technology that enables us to «see» sequences of graphic symbols traveling from the pages of a book into compartments of the brain (in a possible bottom-up process). Even more outlandish is the notion that one might be able to watch information from the brain make its way down onto the page

(in typical top-down strategies). Further, once something is read – information from the written text is stored – no technology allows us to empirically measure exactly what is lodged in the brain. All assessment of reading must be carried out by inference.

#### TYPES (GENRES) OF READING

Each type or genre of written text has its own set of governing rules and conventions. A reader must be able to anticipate those conventions in order to process meaning efficiently. With an extraordinary number of genres present in any literate culture, the reader's ability to process texts must be very sophisticated. The common genres, which ultimately form part of the specifications for assessments of reading ability, are the following: academic reading, job-related reading, personal reading.

The genre of a text enables readers to apply certain schemata that will assist them in extracting appropriate meaning. If, for example, readers know that a text is a recipe, they will expect a certain arrangement of information (ingredients) and will search for a sequential order of directions. Efficient readers also have to know what their purpose is in reading a text, the strategies for accomplishing that purpose, and how to retain the information.

The content validity of an assessment procedure is largely established through the genre of a text. For example, if learners in a program of English for tourism have been learning how to deal with customers needing to arrange bus tours, then assessments of their ability should include guidebooks, maps, transportation schedules, calendars, and other relevant texts.

Aside from attending to genres of text, the skills and strategies for accomplishing reading emerge as a crucial consideration in the assessment of reading ability. The micro- and macroskills below represent the spectrum of possibilities for objectives in the assessment of reading comprehension.

##### Microskills:

1. Discriminate among the distinctive graphemes and orthographic patterns of English.
2. Retain chunks of language of different lengths in short-term memory.
3. Process writing at an efficient rate of speed to suit the purpose.
4. Recognize a core of words, and interpret word order patterns and their significance.
5. Recognize grammatical word classes (nouns, verbs, etc.), systems (e.g., tense, agreement, pluralization), patterns, rules, and elliptical forms.
6. Recognize that a particular meaning may be expressed in different grammatical forms.
7. Recognize cohesive devices in written discourse and their role in signaling the relationship between and among clauses.

##### Macroskills:

1. Recognize the rhetorical forms of written discourse and their significance for interpretation.
2. Recognize the communicative functions of written texts, according to form and purpose.
3. Infer context that is not explicit by using background knowledge.
4. From described events, ideas, etc., infer links and connections between events, deduce causes and effects, and detect such relations as main idea, supporting idea, new information, given information, generalization, and exemplification.
5. Distinguish between literal and implied meanings.
6. Detect culturally specific references and interpret them in a context of the appropriate cultural schemata.
7. Develop and use a battery of reading strategies, such as scanning and skimming, detecting discourse markers, guessing the meaning of words from context, and activating schemata for the interpretation of texts.
8. Use marginal notes, outlines, charts, or semantic maps for understanding and retaining information.
9. Distinguish between literal and implied meanings.
10. Capitalize on discourse markers to process relationships.

Reading could be subdivided into at least five different types of reading performance. Variety of performance is derived more from the multiplicity of types of texts (the genres listed above) than from the variety of overt types of performance. Nevertheless, for considering assessment procedures, several types of reading performance are typically identified, and these will serve as organizers of various assessment tasks:

1. Perceptive. In keeping with the set of categories specified for listening comprehension, similar specifications are offered here, except with some differing terminology to capture the uniqueness of reading.
2. Selective. This category is largely an artifact of assessment formats. In order to ascertain one's reading recognition of lexical, grammatical, or discourse features of language within a very short stretch of language, certain typical tasks are used: picture-cued tasks, matching, true/false, multiple-choice, etc.
3. Interactive. Included among interactive reading types are stretches of language of several paragraphs to one page or more in which the reader must, in a psycholinguistic sense, interact with the text.
4. Extensive. Extensive reading applies to texts of more than a page, up to and including professional articles, essays, technical reports, short stories, and books.

At the beginning level of reading a second language lies a set of tasks that are fundamental and basic: recognition of alphabetic symbols, capitalized and lowercase letters, punctuation, words, and grapheme-phoneme correspondences. Such tasks of

perception are often referred to as literacy tasks, implying that the learner is at the early stages of becoming «literate». Some learners are already literate in their native language, but in other cases the second language may be the first language that they have ever learned to read. This latter context poses cognitive and sometimes age-related issues that need to be considered carefully. Assessment of literacy is no easy assignment, and should be taken with care by teachers.

JEL classification: J53

## **IMPACT OF SOCIAL MEDIA SITES ON JOB PERFORMANCE**

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### **ABSTRACT**

*SOCIAL NETWORKING SITES, JOB PERFORMANCE, PRODUCTIVITY, WORKPLACE, USER GENERATED CONTENT*

*This thesis is a support to North's (2010) research to examine whether social networking site use by employees influences their productivity. Some studies claim that the use of social networking sites makes employees happier and, therefore, more productive (AT&T, 2008) while other studies consider social networking site use a reason for reduced productivity since it can waste time and be addictive (Accountemps, 2010).*

### **BACKGROUND**

There is a huge debate between academic and business people on the value of using social networking sites in the workplace. Some say that their use in the workplace is a waste of time while others think that it leads to improvements in job performance. This study will try to resolve this debate by exploring the use of social networking sites in the workplace and its effect on job performance.

Like several growing technologies, social media sites, and their use in the workplace, have become a debatable issue. Many say that the use of social networking sites in the workplace leads to better employee productivity through effects on intermediate variables (AT&T, 2008). Others say that the biggest concern about the use of social networking sites in the workplace is the loss of labor productivity due to time wasted at work (Accountemps, 2010). A study by Nucleus Research (2009) reported that the use of Facebook at work results in a 1.5 percent decrease in productivity. Leidner and others (2010), on the other

hand, found that the ability of employees to access Facebook at work was a great incentive for retention – particularly of new hires, as they can be socially connected with family, friends and other coworkers in the workplace. Also, a study made by AT&T found that 65 percent of employees believed that using social networking sites in the workplace helped them be more productive (AT&T, 2008).

Many researches social networking sites were made on students, which may not be related to the business world.

Several studies have been made about social networking sites. In particular, North (2010) studied the use of social networking sites in the workplace by prospective and current employees.

He found that although some people find social networking site use to have negative effects, they think that its use at work is important because using social media while at work makes them happier and, therefore, more productive.

A study done by Nucleus Research showed that, approximately, 47 percent of the 237 office workers interviewed used Facebook in their workplace for 15 minutes daily. That study concluded that the use of Facebook at work results in a 1.5 percent decrease in productivity (Nucleus, 2009).

This thesis is a support to North's (2010) research to examine whether social networking site use by employees influences their productivity. Some studies claim that the use of social networking sites makes employees happier and, therefore, more productive (AT&T, 2008) while other studies consider social networking site use a reason for reduced productivity since it can waste time and be addictive (Accountemps, 2010).

#### PROBLEM STATEMENT

Many studies have shown that the popularity of social media and their increasing use in the workplace present some worries for employers, but all signs are that employers cannot hope to prevent social network use during work hours.

Launched in February 2004, Facebook is arguably the most popular social networking site with over 1.3 billion registered users (Statista, 2014). The typical internet user spends an average of six hours per month on Facebook (Popkin, 2012), and more than 60 percent of internet users use Facebook on their mobile phones (Adler, 2014).

Easily the most common use of Social Networking sites, and the main reason for them existing in the first place, is for personal reasons. The majority of people using Facebook is to keep the «social» label. It is used for its original purpose – to keep in touch with friends (Collins, 2014).

A problem therefore arises where employees spend more and more time on social media and getting interested in non-work-related activities such as making personal networks, checking on family and friends, downloading music and video. This comes at time when

organizations have been faced with many challenges and are looking for different ways to remain surviving. The development of social media policies and internet use policies by most employers is at an early stage as most employers do not have proper policies, although practice has used control and restriction. One of the challenges of this business age is to enhance productivity of the workforce in order to increase profits and avoid wastage of resources. This article therefore is to investigate the effects of the social media in the workplace on employee job performance.

#### PURPOSE

The main purpose of the study is to attempt to resolve the debate whether or not the usage of social media sites in the workplace leads to added value to the company by inspecting the use of social networking sites in the workplace and its effect on job performance. Also, it will explore the relationship between social networking sites use intensity and job performance.

Different studies have been done on social media site use covering several subjects ranging from ethical issues (IBE, 2011) to privacy and security ones (Dhami, 2013). Few researches have inspected deeply whether the use of social networking sites in the workplace has any potential benefits for businesses in terms of job performance. Therefore, this paper tends to reduce this gap in the world of social networking sites by examining whether the use of social networking sites in the workplace contributes to higher levels of job performance. In order to achieve this, we have to answer this question: Does the use of social media sites in the workplace lead to a better job performance?

#### MAIN BODY

Social media site use in the workplace is relatively a new phenomenon that deserves researchers' attention. The effects of social networking site use in the workplace have been part of a debate in the business world. Social networking site use can be a source of reduced productivity since it can be a waste of time. It also can be seen as a source of high performance. This article proposes that social networking site use offers employees social support which can eventually lead to less higher job performance.

Several studies have focused on social networking sites, but they rarely talk about the effects of social networking sites on job performance. For instance, North (2010) examined the use of social networking sites in the workplace by prospective and current employees. He found that although some participants find social networking site use to have negative aspects, they believe that its use at work is worthwhile.

Social networking site use has benefits and drawbacks in the workplace. The survey, conducted for Microsoft Corp. by research firm Ipsos among 9,908 information workers in 32 countries, also found that 39 percent of employees feel there isn't enough collaboration

in their workplaces, and 40 percent believe social tools help foster better teamwork. More surprisingly, 31 percent said they are willing to spend their own money to buy social tools (Microsoft, 2013).

Some claim that the use of social networking sites in the workplace leads to better staff productivity, as a result of higher morale, among other benefits (AT&T, 2008). Others believe that social networking site use in the workplace leads to a loss of staff productivity (Accountemps, 2010). Actually, Nucleus Research (2009) had reported that the use of Facebook at work results in a 1.5 percent decrease in productivity.

On the other hand, a European study found that 65 percent of employees believed that using social networking sites helped them be more productive (AT&T, 2008). This thesis will show that the use of social networking sites in the workplace can provide employees a sense of social interaction with friends, family members and coworkers. This interaction provides employees with many resources, including work related resources for advice and business information.

Social media site use intensity can enhance employees' job performance in the workplace. This is because social networking site use can serve as a social resource that provides social relations. This social resource, in turn, influences job performance through the provision of social support. Yang and others (2009) reported that «social networks serve as a social resource which affects job performance through the provision of supportiveness». Social networking site use facilitates open communication, leading to enhanced information discovery and delivery. It allows employees to discuss ideas, post news, ask questions and share links. Also, it provides an opportunity to widen business contacts.

Many other large studies made by professionals like Forbes, Microsoft and many universities, using social networking sites in the workplace has a positive effect on the employee at least it is making him happy, and happiness in the workplace leads to a better job performance.

## CONCLUSIONS

Banning social networking sites in the workplace is not the ultimate solution for companies. They should know how to use them wisely and to try to control their employees' usage of these sites. Since social media tools let employees share their ideas and connect more easily with their colleagues, intuition would say that a socially-enabled company could enhance how employees feel about their workplace.

Research by the University of California, Irvine team found occasionally «grazing» social media sites like Facebook can work as a mood booster. These social media breaks can act as a mental palate cleanser, helping workers with a quick mood enhancer, allowing you to return to the task at hand refreshed.

Finally, studying the effect of using social media sites in the workplace on job performance



is important for many reasons. First, the human resource departments will benefit from understanding the relationships between social networking site use in the workplace and job performance that can help reveal the underlying rationale for organizations to either allow or disallow the use of social networking sites in the workplace. Organizations are searching for available ways to increase productivity. If the use of social networking sites turns out to be one of these means, organizations will be able to add the use of social networking sites in the workplace to their practices to enhance job performance.

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JEL classification: G28

## MAIN DIRECTIONS OF IMPROVING THE EFFECTIVENESS OF FINANCIAL CONTROL IN THE REPUBLIC OF BELARUS

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ABSTRACT

*FINANCE, FINANCIAL CONTROL, THE EFFECTIVENESS OF FINANCIAL CONTROL*

*The main trends of the financial control system in Belarus are reviewed in the article. The directions of financial control improving in Belarus are proposed. A growing need of the qualified human resources for audit identified.*

Financial control is one of the most important components of financial management. Its purpose is «to contribute to the successful implementation of the financial policy of the state, ensuring the process of formation and effective use of financial resources in all spheres and levels of the national economy» [1, p.5]. The development of the financial control system in our country is characterized by the following trends: reduction of the scope of state control; its concentration on macroeconomic processes (control over the movement of money supply and gross domestic product); orientation of the state financial control to the social sphere (control over the effective and targeted expenditure of funds aimed at financing health care, education, social policy and other sectors) and the activities of unprofitable organizations.

The main task of regulatory authorities in modern conditions is to determine the effectiveness and efficiency of economic and financial transactions performed by business entities subject to verification. To increase the effectiveness of state financial control, it is necessary to provide for the introduction of new technologies, development of a unified system of audit results, and to supplement financial control with the results of an audit carried out by independent auditors and non-state auditing firms. Experts note that reliable implementation of the results of control activities can be achieved by publicizing not only the results of control measures, but also the results of their implementation through the introduction of appropriate statistical reporting [2]. The implementation of new areas of state financial control involves improving its regulatory framework, developing new documents to determine the regulations, methods and procedures for implementing financial control, which would take into account the current development of the country's

economy and the priorities of international cooperation [3].

An important direction to improve financial control is to increase the role of preliminary control. At its core, preliminary control is the most effective form of control, as it is of a preventive nature. By preventing irrational use of resources, it contributes to improving the final results of the activities of business entities.

Improving financial control is impossible without the formation of a qualified human resources. The development of market relations in the country involves increased financial risks, increased competition among businesses, so the demand for audit services in the coming years has significantly increased. This will require upgrading the skills of existing auditors, training new audit staff, and improving the legal norms in the field of audit [4]. Thus, a well-organized financial control forms high professionalism, competence and efficiency for employees of all levels of management, which is the key to successful solution of political and economic tasks in a market economy [1, p.5].

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JEL classification: G28

## THE INFLUENCE OF THE MODERN INTERNATIONAL FINANCIAL SYSTEM ON THE DEVELOPMENT OF FINANCE IN THE REPUBLIC OF BELARUS

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### ABSTRACT

*FINANCE, INTERNATIONAL FINANCIAL SYSTEM, BANKING SYSTEM, INTERNATIONAL CAPITAL MARKETS*

*The factors influenced on the financial market and the finance system of Belarus are reviewed in the article. The directions of development of the Belarus finance are proposed. The implementation of these directions will ensure the stability of the financial sector of the Republic of Belarus and its effective integration into the international financial space.*

The role of any country in the global economy, the international division of labor and the internationalization of economic life depends on a number of factors, such as the level of the development of the national economy and its dynamics, the degree of its openness and involvement in the international division of labor, the progressiveness and development of foreign economic relations, the ability to adapt to the conditions of the international economic life and at the same time the ability to influence this conditions in the desired direction.

«The role of international organizations is constantly growing in the modern world.

Their activities cover almost all forms of multilateral cooperation and partnership between countries, and it is also the basis for strengthening peace and stability, creating conditions for the successful socioeconomic development of the states of the world community». [1]

Belarus is a member of the three largest international financial and credit organizations – the International Bank for Reconstruction and Development, the International Monetary Fund and the European Bank for Reconstruction and Development.

By joining these organizations our country, in addition to increasing prestige in the international arena, has gained the opportunity to attract loans. The main objectives of international cooperation and partnership with these organizations of the Republic of Belarus are:

- intensification of cooperation between international economic organizations for solving the problems of the transitional stage of the social development of the Republic of Belarus;

- strengthening confidence in the republic as a promising and reliable trade and economic partner, as well as strengthening relations with international economic organizations in order to increase the volume of financial and scientific and technical assistance provided by the world community to the Republic of Belarus.

The IMF's cooperation with the Republic of Belarus is carried out in three main directions:

- interaction with the Government of the Republic of Belarus and the National Bank in the preparation of economic policy programs with an emphasis on fiscal and monetary policy, the exchange rate and trade policy;

- provision of credit resources, if necessary;

- technical expert assistance.

The implementation of the «stand-by» program from the year 2008 was completed in April 2010. It allowed to stabilize the currency market, to ensure greater stability of the financial system, to avoid a balance of payments crisis, and in addition to avoid a recession and maintain a low level of unemployment.

The IMF in connection with the completion of this program began additional consultations with the Republic of Belarus on monitoring in the post-program period. During the period from 2011 to 2013 a series of visits were held by IMF experts to evaluate economic policy measures and develop proposals. The purpose of these visits was further improvement of the efficiency of the Belarusian economy.

The European Bank for Reconstruction and Development has focused its activities on financing the private sector. The Bank also has the opportunity to work in the public sector in environmental, energy and infrastructure projects.

By the end of 2017 the EBRD had invested over 200 million Euro in the economy of the Republic of Belarus. In 2016, a four-year EBRD Strategy for 2016-2019 was adopted [2]. In this strategy, the so-called calibrated approach, that limited cooperation with the public sector, was canceled. According to the new Strategy, the EBRD aims to expand investment cooperation with Belarus in the areas of finance, transportation, energy and housing and communal services.

At the moment, the following World Bank investment projects are implemented in the Republic of Belarus:

- «Biomass district heating with local wood chip supply in the Republic of Belarus» (\$ 90 million);

- «Transit Corridor Improvement Project» (\$ 250 million);

- «Belarus Education Modernization Project» (\$ 50 million);

- «Public Financial Management Modernization Project for Belarus» (\$ 10 million);

- «Belarus Health System Modernization Project» is being ratified for the amount of \$ 125 million,

Since the beginning of the membership of the Republic of Belarus, the total amount of loans provided by the Bank for the implementation of investment projects has exceeded \$ 1.215 billion.

Cooperation with the World Bank is carried out within the framework of the World Bank Group's Partnership Strategy for the Republic of Belarus for 2014-2017 fiscal years.

«Belarus has not yet fully utilized the international mechanisms of trade and economic relations and is experiencing the stimulating effect of international competition on national production. Therefore, one of the primary goals of reforming the national economy could be the correction of the current situation». Since the existing gap in the levels of development of the productive forces of Belarus and the economies of developed countries, there is a real danger of its increase. The country's external dependence in the economic, scientific, technological and other fields can also increase and cause severe damage to the Republic of Belarus [3].

The implementation of measures to strengthen the banking system should result in an increase of the attractiveness of Belarusian banks for foreign and domestic investment, as well as increase the interest of the population in keeping savings in the banks of the Republic of Belarus.

In order to increase the inflow of investments into the economy of the Republic of Belarus, it is necessary to carry out work in the following areas:

- development of the market of state, municipal and corporate securities;
- improvement of the legal framework for the securities market;
- improvement of infrastructure and tools in the securities market.

The development of this market will immediately affect the mobilization of both domestic and external sources of financing of the country's budget deficit.

Access to international capital markets is also an important area for attracting foreign investment. The main task here is cooperation with international financial organizations and central banks of foreign countries. This partnership will increase confidence in the monetary and currency market policy of the Republic of Belarus as the basis for obtaining a higher credit rating of the country on international capital markets. Foreign investment is an important factor in the economic development of countries with a relative lack of equity. The government should encourage foreign investment in every possible way and confront existing opinions about the undesirability of a foreign presence in the economy.

Let's give a simple example from the statistics of the Republic of Belarus regarding the volume of investments of residents of the Republic of Belarus abroad and the volume of foreign investment in the Republic of Belarus.

The volume of investments accumulated abroad from the Republic of Belarus in 2013

compared to 2012 increased by 254.4 million US dollars, but in subsequent years had a steady downward trend. Thus, the volume of investments abroad decreased in 2016 compared to 2013 by 1.6 times and amounted to 3,889.03 million USD.

The total volume of foreign investment in the Republic of Belarus tended to increase until 2014. In 2015, there is a significant decrease in foreign investment in Belarus. The figure for two years has decreased by more than \$ 7,500 million. Reduction of investment inflow in 2016 is characterized by a value of 2,784.3 million US dollars. The decrease in the volume of foreign investment in the Republic of Belarus indicates a decrease in investors' interest in the national economy of the Republic of Belarus and its integration into the world economy.

Foreign investment is very volatile. Short-term speculative assets quickly come to the country, attracted by a high rate of profit, but with the slightest instability leave even faster, causing a «chain reaction». Since crises of different scale are cyclical and financial losses for the state are practically inevitable, the problem of finding an effective set of emergency measures comes to the fore. These measures allow to «mitigate the impact» in time and minimize the negative consequences of the crisis.

A promising task for the state is to create conditions for reorienting the interests of non-residents from a purely speculative portfolio to investing in the real sector of the economy.

For the period up to 2020, Belarus sets the goal of developing the financial market: its qualitative transformation, increasing the stability and efficiency of its operation, aimed at growing the economy and the welfare of the population.

The perspective directions of development of the Belarus finance are:

- 1) cooperation with the IMF, a group of the World Bank, the Eurasian Stabilization and Development Fund and other international financial organizations
- 2) attraction of financial resources to the banking sector of the republic
- 3) expansion of cooperation with foreign export credit insurance agencies
- 4) creation of the common financial market of the UNEG member states

The implementation of these directions will ensure the stability of the financial sector of the Republic of Belarus and its effective integration into the international financial space. The introduction of advanced methods and approaches will create the prerequisites for converting the Republic of Belarus into a higher country category in the OECD classification.

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## FINANCIAL REGULATION OF THE INVESTMENT PROCESS: EUROPEAN EXPERIENCE

## ФИНАНСОВОЕ РЕГУЛИРОВАНИЕ ИНВЕСТИЦИОННОГО ПРОЦЕССА: ЕВРОПЕЙСКИЙ ОПЫТ

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### ABSTRACT

INVESTMENT PROCESS, FINANCIAL  
MARKETS, FINANCIAL REGULATION,  
INTEGRATION ASSOCIATION, EURASIAN  
ECONOMIC UNION, EUROPEAN UNION,  
INVESTMENT PLATFORM

*The article considers the forms of financial regulation of the investment process in the European Union. The problems and directions for improving*

### АННОТАЦИЯ

ИНВЕСТИЦИОННЫЙ ПРОЦЕСС, ФИНАНСОВЫЕ РЫНКИ, ФИНАНСОВОЕ РЕГУЛИРОВАНИЕ, ИНТЕГРАЦИОННОЕ ОБЪЕДИНЕНИЕ, ЕВРАЗИЙСКИЙ ЭКОНОМИЧЕСКИЙ СОЮЗ, ЕВРОПЕЙСКИЙ СОЮЗ, ИНВЕСТИЦИОННАЯ ПЛАТФОРМА

*В статье рассмотрены формы финансового регулирования инвестиционного процесса в Европейском союзе. Определяются проблемы и направле-*



*budgetary and investment financing in European countries are identified. The necessity of using the European experience of creation of investment platforms in the EAEU countries with the purpose of co-financing investment projects with the participation of international financial organizations, national development banks and private investors is substantiated.*

*ния совершенствования бюджетного и инвестиционного финансирования в европейских странах. Обосновывается необходимость использования европейского опыта создания инвестиционных платформ в странах ЕАЭС с целью со-финансирования инвестиционных проектов с участием международных финансовых организаций, национальных банков развития и частных инвесторов.*

The experience of regulating the investment process in the context of Eurasian Economic Union with the participation of Belarus, Russia, Kazakhstan, Armenia and Kyrgyzstan is currently an insufficiently studied academic area. This circumstance makes it vital to study the experience of implementing social and economic processes, including the laws governing the mechanism for regulating investments in well-established integration associations, in particular in the European Union (EU).

Application of the above methods together with analysis of relevant academic literature has made it possible to determine that the EU has a single investment regulation mechanism, which is implemented in the following areas:

- Having common goals and instruments selection for the implementation of the investment policy within the EU,
- Formation and functionality of a supranational regulatory mechanism that facilitates investment,
- Creation and reformation of the institutional and legal and regulatory framework,
- Stimulation of the flows of investment, based on the overall socio-economic development goals of the EU member states, accounting for national interest,
- Development of governmental and business interrelations for widening of the sources of investment financing,
- Development of a favorable investment climate within in the integrated association.

Regional development has always been and remains one of the priorities of the integrated financial market of the EU , implemented through a policy of adjusting the level of national economic and financial systems for higher consistency. The process of financing investments, organizing it, identifying priority areas for regional development is implemented in the EU through a system of budgetary financing. Budgetary resources are distributed through five specialized structural funds of the EU (ESI Funds). The total budget of structural funds is approximately 450 billion Euro for the period of 2014-2020.

The funds are transferred through the mechanism of national co-financing of long-term targeted programs.

It should be noted, that to date the experience of implementing investment programs in the EU through structural funds differ to some extent in their effectiveness. This is to some extent is due to the flaws in centralized financing. In particular, the insufficient targeting of the financial resources mobilization, overfunding of individual projects, and sometimes – dispersion of funds. There are also shortcomings in organization, implementation and management of investment programs. As S. Glinkina and N. Kulikova point out, the experience of recent years has shown weak ability of the integration model of economic growth practiced in the Central East European countries. The significant transfers made by the EU from structural funds and the Cohesion Fund to the new EU countries (in the total volume of 2.6 % of their total GDP) could not stop the tendency to increase the heterogeneity of the Europe [1].

Budgetary financing for regional and sectorial development is an important, but not the only source of stimulation of investment within the EU. The subject of our analysis is that part of it covers the regulation of investment flows for the purposes of economic growth. This direction is carried out at the integration level – through the European Commission (EC) and the European Investment Bank (EIB), and at the national level – through the banking and budgetary systems, as well as the financial institutions of countries. The reflection of these actions is currently the adoption of the so-called Juncker Plan (Investment Plan for Europe, 2015). It is prepared by the European Commission and the European Investment Bank to stimulate investment within the European economy [2].

The most important element of the financial provision of the Investment Plan is the European Strategic Investment Fund (EFSI) with an initial resource of 21 billion Euro. This amount of resources will allow investors to create a pool of additional funds for investments, that will be managed by the European Investment Bank (for supporting infrastructure and enterprises) and the European Investment Fund (to support the small and middle enterprises). The European Investment Bank is depending on the scale of the project, can invest in three options: directly, either through financial intermediaries or through investment platforms. The choice of the financing option depends on the scope of the project, the level of investment risk and some other factors. To finance medium-sized projects (up to 25 million Euro), as well as for projects with high added value, the EIB developed a portfolio approach, creating so-called investment platforms.

The Investment Plan provides an opportunity to apply different options for sharing the resources of the EFSI and structural funds to finance priority projects within the EU. The first option provides co-financing, when the support of structural funds programs covers part of the cost of the project. For example, a national investor provides a portion of the initial investment amount. The remaining part of the financial resources is covered by the

structural funds in the form of a grant, and the remaining part of the resource is covered by the loan from the EFSI. The second option reflects the situation when the money available from the structural funds provides the basic financial need of an investment project through an international or cross-border financial instrument, in the form of a loan or a guarantee. The support of the EFSI is ensured by the EU guarantee. The internal investor also participates in the financing, therefore making the project more attractive due to the guarantee and credit provided by the structural fund. The third option involves co-financing of structural funds and the EFSI at a higher level than individual projects through the formation of an investment platform into which the EFSI and other investors channel their resources in the form of a multi-level fund. Thus, the investment platform accumulates capital from the EFSI and separates funds from the structural funds programs, as well as their investment in specific projects, in which national investors can also participate.

Investment platforms are a relatively new entity in the financial markets. They combine the resources of state investment structures at the European and national levels, as well as involving private investors. In this process, commercial banks, investment and pension funds, sovereign investment funds and other financial institutions participate as private investors. Traditionally in Europe, this function was performed by the commercial banks. However, it is now established that banks are not always able to effectively perform their investment tasks. In this connection, attention is now focused on the direct movement of resources through financial markets. To a large extent, financial assets are accumulated in the securities market, through the issuance of bonds and other debt instruments. In such conditions, the role of financial intermediaries – subjects of the securities market – significantly increases.

Experience of the mechanism for regulating the investment process in the EU makes it possible to draw some conclusions that should be taken into account in the process of forming investment regulation mechanism in integration associations with the Republic of Belarus:

- the main goal of regulating the investment process in the integration association is the long-term investments growth of the real sector of the economy. At the same time, it is necessary to achieve financial stability of the balanced and uniform development of individual national economic and financial systems. This feature is directed at increasing sustainable economic growth and improving welfare of the population within the integrated association,
- regulation of the investment process within the framework of a regional association is a long-term dynamic process that requires constant improvement and adaptation of its methods and tools to the achieved level of socio-economic and political development of the member states,
- market regulation of investment in the integrated association should be based on

the use of progressive financial instruments and intermediaries, the degree of activity of which depends on the level of development and features of national financial markets. The formation of an integrated financial market is the determining condition of a single regulatory mechanism and provides additional sources of investment financing,

- state financial participation in stimulating the investment process is expedient to realize through investment platforms. This applies to joint platforms for collective investment involving international, national government investment structures, as well as private investors - banking and non-banking financial institutions.

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