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«Importance of Soft Skills for Life and Scientific Success»

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1st International Scientific and Practical Internet Conference "Importance of Soft Skills for Life and Scientific Success" devoted to the experience of forming and developing competencies needed by the modern world.

Topics cover all sections of the International Electronic Scientific and Practical Journal "WayScience", namely:

- public administration sciences;
- philosophical sciences;
- economic sciences;
- historical sciences;
- legal sciences;
- agricultural sciences;
- geographic sciences;
- pedagogical sciences;
- psychological sciences;
- sociological sciences;
- political sciences;
- philological sciences;
- technical sciences;
- medical sciences;
- chemical sciences;
- biological sciences;
- physical and mathematical sciences;
- other professional sciences.

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Pedagogical sciences

EDUCATION WITH SCIENCE: SUMMER SCHOOL OF BIOLOGY

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Summer school of Biology one of many experimental approaches to modern training, linking school study with science and the transition to the university.

This need to establish similar teaching is emerged during the last five years on the introduction of STEAM education.

STEAM education is learning that uses natural sciences, technology, engineering, the Arts and mathematics as access points for finding knowledge and guiding to teen interests, dialogue and critical thinking.

Our motivation for developing Summer school of Biology in Institute of biology and immunology, Bulgarian academy of sciences is coming partly from a concern about, that traditional teaching approaches did not providing to students with the needed skills in the modern conditions of the online environment of study. It was necessary during the outbreak of the coronavirus pandemic, but it is not just about the current period, these changes will have an impact on the future learning process.

The Summer school of Biology project aimed at improving science literacy, cover interests and provide experimental practice in the laboratories of the institute, something that is missing in many school base. But practice skills are important for young people with an interest and desire to continue to engage with biological sciences.

The priority group of the program are upper secondary students (from 8-th to 12-th grade); of course, there are also educational circles, nature discussions, fun and safe experiments with children younger than that.

The Summer school of Biology includes leading approaches in science education: (1). integrating “science as inquiry” was the underlying philosophy of our program; and (2) introducing science in specific context through development of student projects.

Biology as inquiry focus on the need for students to experience the process of science in order to view science as a way of knowing, rather than as a body of rules and theory. The problem posing, problem solving by the learners themselves, helps them gain skills in the full range of scientific practice. Specific case studies motivate students to search out information and develop analytical skills needed to solve some problems of veterinary practice or clinic research of human medicine, arouse interest in learners and let to increased personal social and psychological skills.

In conclusion, Summer school of Biology positively impact cognitive development, increase literacy, biology skills, and help students to fosters creative thinking. It is addressing on the role of science in society. Helping students make connections between their science studies through projects, skills and their own lives is a major component of the successful implementation of STEAM training and a step towards modern education, where biology/science needs to be realized through cognitions (exercises, observations, demonstrations, experiments, arts).

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Technical sciences

AN INTELLIGENT INFORMATION SYSTEM FOR ENSURING THE SAFETY OF THE JEYRANBATAN RESERVOIR

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We investigate the degree of purity of drinking water in the artificial Jeyranbatan reservoir located on the Absheron peninsula of the Republic of Azerbaijan, and its dependence on physical and chemical substances. The main sources of pollution in the Jeyranbatan reservoir are waters flowing from the dams into the reservoir. An analysis of wastewater, especially from the southwestern dam, shows that the specific electrical conductivity of water, the content of impurities and nitrites, mineralization is many times higher than the maximum permissible concentration. This fact is confirmed by the monitoring conducted by the Hydrotech LLC water quality control laboratory between June 2016 and July 2017. One of the results of this research was the frequent monitoring of the territory through which the canals flow, identifying sources of contamination and creating a set of measures to prevent it.

The article deals with the issue of water safety management from a single point of control. The Jeyranbatan reservoir fed by the Samur-Absheron Canal and the system of water treatment facilities built on the shore of the reservoir have a large share in the drinking water supply of the Apsheron peninsula. Its source of water supply is the Samur-Absheron Canal, which draws water from the Samurchay, Velvelechay, and Gudyalchay rivers. The water supplied to Baku and Sumgayit, most of Absheron, Khazar, Sabunchu and Surakhan districts today is treated in Jeyranbatan.

Samples are taken at 7 locations of the Jeyranbatan reservoir, and both autonomous and cumulative status of indicators are investigated. These are Takhtakorpu-Jeyranbatan canal of the Jeyranbatan reservoir (hereinafter referred to as JR), near the water intake facility of JR, near the southern pumping station of JR, wastewater of the southwestern dam of JR, wastewater of the southern dam of JR, wastewater of the northeastern dam of JR, the inlet of the ameliorative pumping station of JR.

Primary information is formed from the samples taken in the Jeyranbatan reservoir. The general data of the information analysis can be divided into four classes according to its nature. These are classes characterizing physical, chemical, organoleptic and microbiological parameters. The corresponding databases are built and processed by analysis of variance, ANOVA.

35 indicators obtained as a result of monitoring over 2017-2020 are comparable with the average indicators for the World Health Organization, the European Union, the state standard and the Apsheron peninsula. A systematic analysis of measurements performed quarterly, monthly and daily revealed a difference in the indicators based the frequency of measurement. Indicators not covered by the relevant structures are treated independently, and the impact of their variability on water composition is considered both individually and cumulatively. Proper monitoring and especially proper determination of measurement frequency intervals directly make it possible to raise the water quality indicators to a high level.

A solution to this very pressing problem is impossible to imagine today without the involvement of information technology. An intelligent information system has been developed for ensuring both the safety of the Jeyranbatan reservoir and increased control over the quality of its drinking water, as well as a rapid response to violations of these conditions.

INVESTIGATION OF THE VOLT-AMPERE CHARACTERISTICS OF METALLIC ZIRCONIUM UNDER THE ACTION GAMMA QUANTA

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The effect of preliminary radiation-oxidative treatment on the current density and current-voltage characteristic of metallic zirconium has been studied. The contribution of preliminary radiation-oxidative treatment to the change in the electro-physical characteristics during thermal and radiation-thermal tests in the contact of zirconium with water is revealed. Analyzing the results of studies of the electro-physical properties of the initial, radiation-oxidatively treated and tested during radiation-thermal and thermal processes of water decomposition of zirconium samples, the following conclusion can be drawn. Completion of the protective oxide film during the radiation-oxidative treatment of zirconium ($D \geq 80$ kGy) is accompanied by a decrease in electrical conductivity and current values in the study of their volt-ampere characteristics. When these samples are tested in the processes of radiation-thermal and thermal decomposition of water, a partial destruction of the protective oxide film occurs as a result of which additional charge carriers accumulate on the surface. The rate of destruction of the surface oxide film and the accumulation of charge carriers during radiation-thermal processes are higher than during thermal processes.

TRANSDISCIPLINARY APPROACH IN PRIMARY EDUCATION

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Abstract. This article highlights the importance of developing a transdisciplinary model of education in the contemporary society in terms of general pedagogical values. The proposed construct is transdisciplinarity, a superior way that encompasses the levels: intradisciplinarity, interdisciplinary, multidisciplinarity, in an open context. It provides generalizations and concretizations in the context of the conceptual framework of the curriculum for the primary education and based on the analysis of the disciplinary curriculum

Keywords: transdisciplinarity, discipline, interdisciplinarity, multidisciplinarity, curricular integration, curricular approach

The concept of transdisciplinarity was introduced in the early 1970s by Jean Piaget. The transdisciplinary methodology is based on the dialogue between disciplines and on the bridges that can be created between them to achieve the unity of knowledge [3 p.37.]. Important are the relationships that are established with the discipline, the interdisciplinarity and the multidisciplinarity. **The disciplinarity** refers to the knowledge gained within a discipline, while the transdisciplinarity energizes the coherence of all dimensions. The two are complementary. **The interdisciplinarity** marks the transfer of the methods from one discipline to another, offering opportunities for new disciplines. **The multidisciplinarity** involves the study of the object of a discipline by methods specific to several disciplines.

In the school environment, transdisciplinary methodologies are applied that offer children transdisciplinary feelings that generate transdisciplinary attitudes. The key / transversal / transdisciplinary competencies are formed and developed progressively and gradually on levels and cycles of education. **The training profile of the primary school graduate** involves:

- *People who are confident in their own strength* (reflect respect and care for others, they distinguish between right and wrong, form opinions, personal opinions, easily express their own thoughts, confess their joys in the team, make decisions, ask for advice, etc.);
- *People who are open to lifelong learning* (they are curious, ask for support when needed, actively participate in formal / informal activities, etc.);
- *Active, creative, innovative people* (they show creativity, practices volunteering, offer help to colleagues, apply rules of correct communication, etc.);
- *Responsible people* (they know the rights and duties of the child, participate in cultural events, know and respect popular traditions and customs, etc.).

The integrated approach of the curriculum involves highlighting connections of skills / units of competence acquired separately, within the different disciplines. A major aspect of transdisciplinary activities, from the perspective of the curricular integration is to capture the interest of the students. They are framed in learning situations through challenging, significant problems, adapted to their cognitive level, being able to capitalize on skills in authentic, new and complex situations, to facilitate the transfer and generate new acquisitions. [2 p.25]

The curriculum for the primary education promotes **transdisciplinary approaches**:

• enrolled in a school day - 7 days a year;

• framed in a lesson - especially lessons of Moral-Spiritual Education, Personal Development.

The motto of the days when we carry out transdisciplinary activities is: *School without textbooks - to better understand the world around us, to become better.* The children do not receive

homework on days of transdisciplinary activities. They come to school without textbooks and notebooks. They bring some materials necessary to carry out the activities, at the teacher's suggestion. A unitary transdisciplinary approach will be carried out in each of these days. The activities can be carried out both outside the school and in the classroom, emphasizing flexible approaches, which encourage positive interaction, motivation and involvement of the students in their own training process, judiciously capitalizing on elements of: adventure-learning / expedition-type, learning heuristics, experiential learning, research-based learning, project-based learning, collaborative learning, task-based learning, problem-based learning.

Depending on the needs and preferences of the students, the resources held, etc., the teacher will choose the generic content for the day (5-7 contents per year). The homework consists of lessons planned over a learning period of several weeks. Examples of such topics: Autumn in Pictures, Traditions and Customs, Dear Country, My Identity, Keeping the Planet Alive !, Holy Book, Healthy Planet, Game and Childhood. Very useful are the active-participatory methods: project method, brainstorming, water lily technique, bunch method, case study, debate, interview, diamond, practical applications, and alternative textbooks include many transdisciplinary game-exercises.

The transdisciplinary approach treats a topic from different perspectives, but its unitary character is preserved. Students, being divided into small groups, encourage cooperation, collaboration, help the student to create a positive self-image, stimulate the self-confidence. If the 6-7 year old student is subjected to a single task, he may get bored, but if we alternate tasks, he will be trained and activated. We must not always give children demanding tasks, but find a harmony between learning and play activities. Through cooperation, there is a mutual learning, a type of learning through which students learn from each other, by sharing experiences.

The didactic game is very important when we approach a topic transdisciplinary. Children learn through play, follow the rules of the game, deal with conflict situations, play roles, etc. It should be present in the preparatory classes, I and II. The students, using such games, become more motivated. The project is an activity through which we evaluate transdisciplinary knowledge over a longer period of time. It is done in a team.

The transdisciplinary approach should not focus on subjects, but on the intellectual or emotional approaches of the student and aims to develop transdisciplinary skills such as: cognitive and creative skills, reflective, social interaction, communication, motor and basic attitudes. Transdisciplinary activities respect the particularities of age and capitalize on the type of intelligence specific to each child (naturalistic, linguistic, logical-mathematical, musical).

In conclusion, transdisciplinary activities should offer children the joy and fascination of surprising and motivating experiences.

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Other professional sciences

IMPORTANCE OF SOFT SKILLS FOR USING VIRTUAL REALITY APPLICATIONS IN EDUCATIONAL FIELDS

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In contrast to the purely intellectual competencies, which played the main role in the training of science and technology professionals during the 20th century, the world of work and research today increasingly demands the development of so-called soft skills in the training of young people [1]. Soft skills are personal and interpersonal qualities of a cross-cutting nature and cover areas as diverse as motivation and behavior towards work, leadership and teamwork or self-confidence [2].

Soft skills are competencies that are in demand by employers in a wide range of fields in the world of work and, consequently, are a concern for higher education institutions with respect to the training of their students. In the specific field of scientific and technological education, it is essential to train higher education students in soft skills focused on activating and mobilizing their intellectual activity in a creative and problem-solving manner: critical thinking, cognitive flexibility and problem-solving capacity through reasoning of a certain complexity. This leads to the need to assess the state of development of soft skills in university faculty who must train these students [3].

Likewise, the need for adequate training of science and technology students must be developed in a context of mastery of virtual learning environments. Indeed, the digital contextualization of this training is a consequence of the vertiginous technological development and the needs of today's society to guarantee the full training of its students in distance learning contexts, among other reasons due to the pandemic of COVID-19. This process urges the need for adequate training in soft skills related to the use of digital content and resources by professors [4]. Some technologies favoring this digital transition, such as Virtual Reality (VR), also have the advantage of incorporating didactically efficient tools in the field of science and technology.

VR is understood as a set of technologies of computational nature that allow the user to acquire a sensory experience of a certain environment [5]. Depending on the degree of immersion and interactivity of the user's experience, VR is either Immersive (IVR) or Non-Immersive (NIVR) [6]. There are studies about the didactic use of VR technologies in different areas of knowledge in higher education, particularly in science and technology, which support its didactic effectiveness [7,8].

This paper presents the results of a quantitative descriptive research based on a survey of our own creation on the formative advantages of VR technologies. The survey consists of three scales, which measure the importance that participants give to soft skills in the use of VR technologies in learning environments, according to the following aspects of their use: (i) technical aspects of VR; (ii) employability and usability of VR; and (iii) didactic and formative approach. In total, the instrument consisted of 10 questions to be rated from 1 (lowest rating) to 10 (highest rating). Thirty-six university professors of engineering degrees participated in the study and were chosen by a

process of probability sampling by convenience. These professors participated in a training session on the didactic use of VR in the field of higher education in science and technology and answered the survey before the session (pre-test) and again after the training (post-test).

The results of the study show that, after the training session, there is a statistically significant increase in the rating given by the participants on all the scales of the survey. This allows us to conclude that there is a certain dependency relationship between the knowledge of the technical and didactic aspects of VR in the field of Engineering and the perception that professors have about the development of certain soft skills linked to its use in the classroom, which is in line with the results of some previous studies [4]. Consequently, it is urgent for universities to propose training actions in the field of soft skills in order to increase the professional training of their professors to incorporate technologies such as VR in their virtual learning environments.

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TEAMWORK AS A CRUCIAL COMPETENCE FOR PROFESSIONAL GROWTH AND SUCCESSFUL CAREER IN MEDICAL SPHERE

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The formation of "soft skills" of specialists is the leading task of training doctors in modern Ukraine. Teamwork is an important competence that determines not only the ability to work in a team, maintain a balance of interests of management, colleagues and their own interests, but also determines the priority of ability to interact effectively to achieve goals.

Thus, one of the main tasks of teachers of the Department of Social Sciences is to acquaint students with the principles of teamwork and training of this competence during practical classes. We consider the experience of realization of team project tasks for students of "History and Culture of Ukraine" to be an important achievement in this direction.

During practical classes in this discipline, teachers offer students to prepare tasks in the form of research projects, which perform two - three teams (depending on the size of the group).

Students of the created group should identify the leader responsible for the project and divide the amount of work to be done: analysis of historical sources and historiography, writing a text, preparing a presentation, public defense of research results. An important test for the team is the peer review of each participant's contribution depending on the amount of work done and the quality of its performance.

Before starting the project, the teachers of the department acquaint students with the importance of teamwork in the soft skills system, orient young people to modern research, which shows the importance of mastering these skills for successful career growth. Emphasis is placed on the need to develop such competencies as readiness to prevent and resolve conflict situations, the ability to give up their own ambitions for the common interest, listen to different points of view, use the experience of colleagues, work hard for a common goal.

An important aspect is to acquaint team members with the criteria for evaluating the work of members of their groups (at their own choice: either evaluate collectively, or entrust this right to the team leader). Teachers of the department offer the following criteria:

- the degree of activity of a team member in finding interesting relevant information, work to attract different types of historical sources, the latest research;
- willingness to cooperate, to help other team members;
- cheering for the final result of the project;
- the quality of the assigned area of work;
- initiative in proposing creative ideas, creative activities for their implementation;
- the ability to correctly comment and criticize opponents;
- productivity at different stages of project implementation, especially at the initial stage of its development and planning.

Team tasks are an interesting experience in mastering the subject of "History and Culture of Ukraine" and an important aspect of the formation of soft skills of future physicians.

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KNOWLEDGE AND SKILLS MANAGEMENT PRACTICES

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Abstract. This article consists of building a modeling of BPMN knowledge and skills management scenarios leading to a workflow development capable of introducing the dimensions of responsibilities and management of the deadlines for completing the tasks necessary to comply more with the requirements of the chapter 7 of the ISO 9001: 2015 standard in terms of management and monitoring of training actions aimed at improving skills.

To build a skills monitoring approach consistent with the challenges of the company and the needs of its employees, reflection within organizations is required in order to develop a cyclical and automated skills adjustment plan respecting a schedule of reflective training, adapted to the needs of different sources of knowledge.

Keywords: «BPMN» Business Process Modeling Notation; workflow; Business Process Reengineering; Skills Adjustment; Knowledge need

1. Introduction

[1] have shown that the classical techniques of information systems engineering are not sufficient to ensure effective skills management: skills management in turn includes several complex and cumbersome processes to manage.

The study conducted by [2] is appropriate for companies in terms of raising awareness among managers of the immediate need to know the critical skills of their staff since it helps them to face competition.

The adoption of an information system 'IS' integrating competence management can resort to business processes sufficiently optimized in order to have the potential to achieve considerable results in terms of managing information complexity.

The current article provides a modeling solution using Business Process Reengineering 'BPR' resulting in a Workflow enabling us to follow-up the different training actions planned as well as the automation of an adjustment plan of competences.

2. Literature Review:

[3] indicated that the determination of the skills required, and the evaluation of the skills acquired can be carried out according to various methods, the choice of which becomes essential.

In order to establishing a training plan, Training engineering relies on a double approach. The first begins with a needs analysis focused on competency analysis.

The second is to implement a training strategy consistent with employee skills. In fact the training needs are not easily identified [4]

According to [5], process time is accelerated just when the software of Workflow management system is used.

3. Research Methodology:

To establish this work, we have adopted the the ASDIM methodology (Analysis, specification, Deployment, Implementation, Monitoring) recommended by in 1991.

3.1 ASDIM Methodology:

- In the step of "Analysis", we will study the requirements of the International Quality Management Standard ISO 9001:2015 [6] 2015 in relation to the improvement of skills.
- The step of "Specification" will be reserved for:
  - The designation of responsibilities for each of the steps in accordance with the BPMN model, as well as the conceptual model (**Annex 2: Model 2**).
  - Master the planning of carrying out the tasks of the different responsibilities.

In this step, we are called upon to identify the reengineering of business processes 'BPR', the modeling of business processes 'BPMN'.

- The step of Deployment processes the design. We exploit all screenshots extracted from computer development by describing its interfaces and their uses.
- The step of "Implementation" is concerned with checking the hypothesis mentioned during the stage of analysis, presenting results and discussing them.

4. Context of the problematic and development of the present research:

Step1: Analysis

4.1 Context of the problematic:

This article consists in building a Workflow mechanism able to introduce the dimensions of time, responsibility and reliability to conform more to the normative requirements of quality management in order to allow the adjustment of staff skills, and the triggering cyclical knowledge needs.

The ISO 9001: 2015 standard requires in this sense that the organization must:

7.1.6) The organization shall determine the knowledge necessary for the operation of its processes and to achieve conformity of products and services. This knowledge shall be maintained and be made available to the extent necessary.

When addressing changing needs and trends, the organization shall consider its current knowledge and determine how to acquire or access any necessary additional knowledge and required updates. Note 1: Organizational knowledge is knowledge specific to the organization; it is gained by experience. It is information that is used and shared to achieve the organization's objectives.

7.2) The organization shall: a) determine the necessary competence of person(s) doing work under its control that affects the performance and effectiveness of the quality management system; b) ensure that these persons are competent on the basis of appropriate education, training, or experience; c) where applicable, take actions to acquire the necessary competence, and evaluate the effectiveness of the actions taken; d) retain appropriate documented information as evidence of competence.

Other requirements of ISO 9001: 2015 as have been the subject of the development of the process activity diagram (Model 1).

4.2 Hypothesis of the present research:

To cope with changing needs and trends, the organization must consider current knowledge and determine how it can acquire or access any necessary additional knowledge and required updates.

For this, we can afford to announce the following hypothesis:

Modeling a BPMN process based on the requirements of the International ISO 9001:2015 standard allows the construction of a Skills Management Workflow.

4.3 Conceptual model of the research hypothesis:

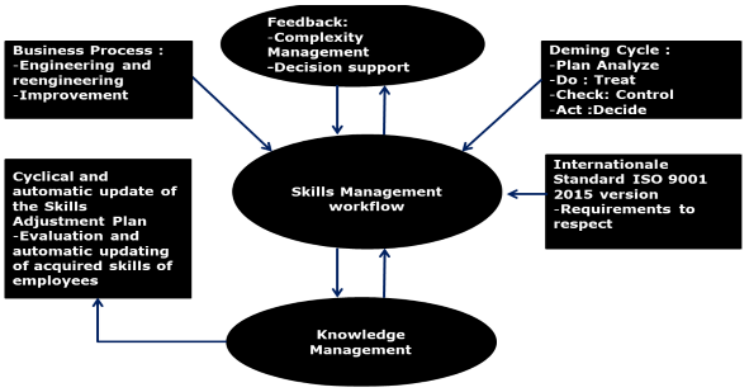

Figure.1. Conceptual Model

5. BPMN' Modeling and Merger by 'BPR'
Step 2 : Specification

5.1 BPM:

Widely known in English under the name of « Business Process Reengineering », 'BPR' is an approach aiming at rethinking, in a creative and innovative way company fundamentals, its way of operation as well as the different technological tools used.

BPMN Modeling Specification:

This research work has the potential to integrate the various sources of knowledge needs **(Annex 1: Model 1)** of the organization under a reliable and efficient information system in direct connection with the training planning, the follow-up of its actions and the update acquired and required skills. **(Annex: Model 2)**

Training engineering will consist of establishing the training plan by consecutive steps in the best possible conditions, taking into account different actors interfering during the framework, before implementing, following-up and evaluating it, as indicated in the standard (See 7.1.6 ISO 9001: 2015).

A diagram of activity sequence was established (Flowchart of skill management sequences **(Model 2))**

6. Results of BPMN Modeling of Skills Management:

Step 3: Deployment

Assessing the sources of knowledge needs and selecting them according to the decision-maker's priorities allows the capitalization of human resources around its objectives and needs, and leads to the construction of a real training plan that must be executed in accordance with the planning put in place.

It is within this framework that specifications of workflow scenarios have been defined following 'BPMN' for the processes of implementation of training actions.

A BPMN model for skills management has been deployed in this context **(Annex3:Model 3)**

7. Deployment of computer development results:

Step 4: Implementation

IT development is now based on BPMN modeling to give rise to a Workflow in order to validate the knowledge needs.

For every type of knowledge need, a color is given (The yellow color: the knowledge need is "waiting"; the green color: the Knowledge need is 'realized'; the red color: the training is 'cancelled'; the blue color: the training is 'underway'). **(Figure 2)**

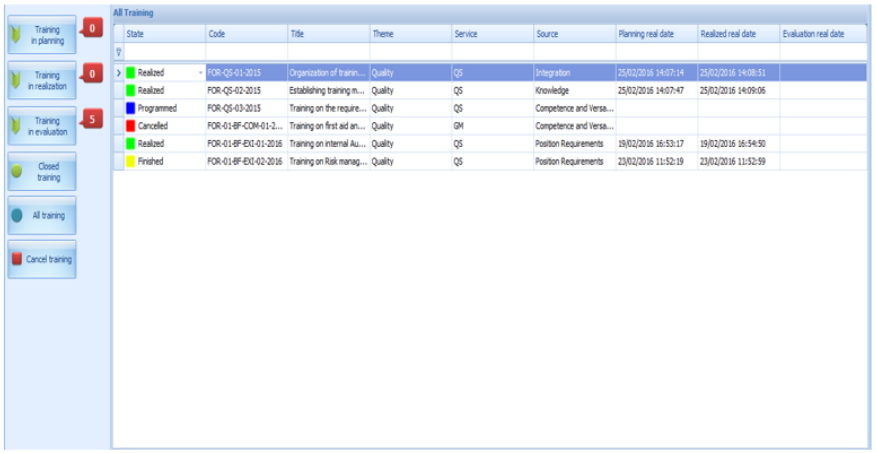

Figure.2. Interface "All Training Actions"

The stage of realization of training returns a feedback to the planning responsible via a signal of changes at the level of the interface named « Trainings in evaluation » precising automatically the state of this step that takes the green color indicating to users that this phase is finished or closed. **(Figure 3)**

Every effective training action realized will be displayed on the adjustment plan of competences. **(Figure 3)**

An automatic update of the adjustment plan of competences permits to register effective trainings in competences already acquired and will be confronted with working position requirements automatically illustrated over that same adjustment plan of competences leading to new training needs identified. (Figure 3)

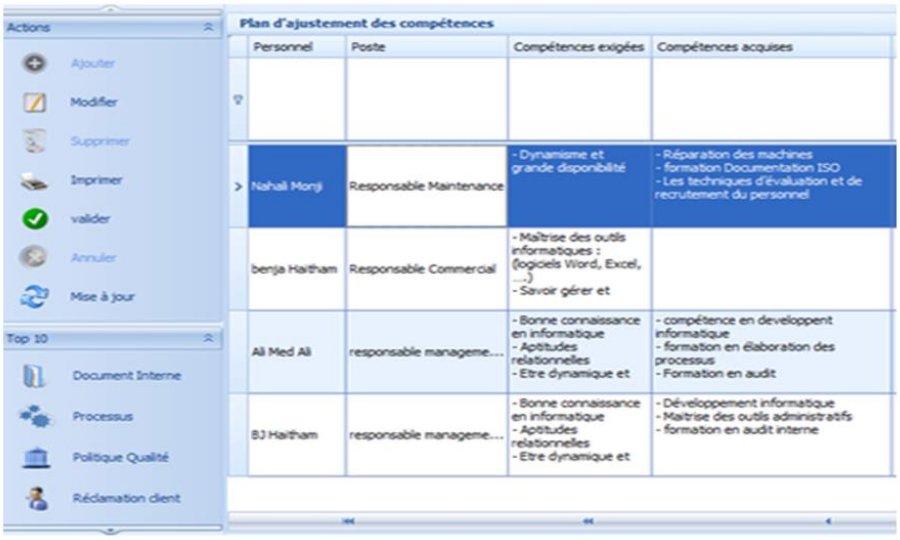

Figure.3. Interface « Plan of adjustment competences» after update

Step 5: Piloting the "Monitoring" skills management process:

The Workflow has enabled us to perform an effective link in terms of feedback. It has helped us to automate the adjustment plan of competences which lead to the cyclical development of knowledge needs. (Chapter Requirement Competence Management 7.2.C ISO 9001: 2015).

Any training action can be canceled; a feedback will be given automatically to the knowledge requirement state 'BC' which will take the red color indicating that the planned action is completely canceled. **(Figure 2)**

Consequently, the training actions carried out, evaluated and judged to be effective will be displayed on the skills adjustment plan following an update as indicated in the ISO 9001: 2015 standard through the requirement 7.1.6 of organizational knowledge .

8. Conclusion

We hope through this article to confirm the results obtained through relevant studies and also through our attempt to perfect an organization by BPR and meeting the requirements of ISO 9001: 2015 Version having the potential to manage skills and knowledge organizational.

Future research could focus on concrete examples of management systems business processes and how they can be leveraged through information systems equipped with Workflow technology with respect to the audit planning process and other relevant processes such as communication in management systems.

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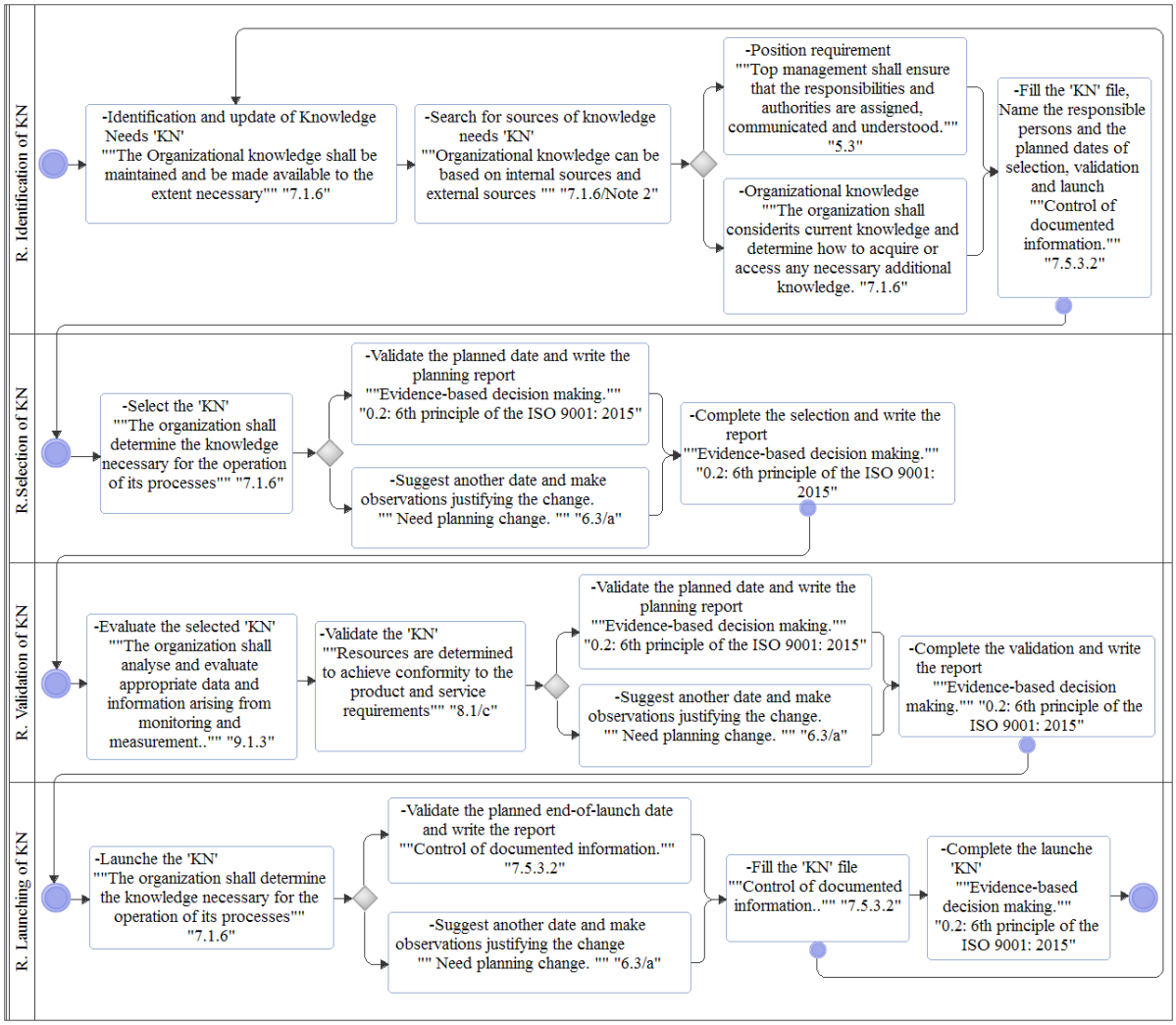
Annexes

Annex.1

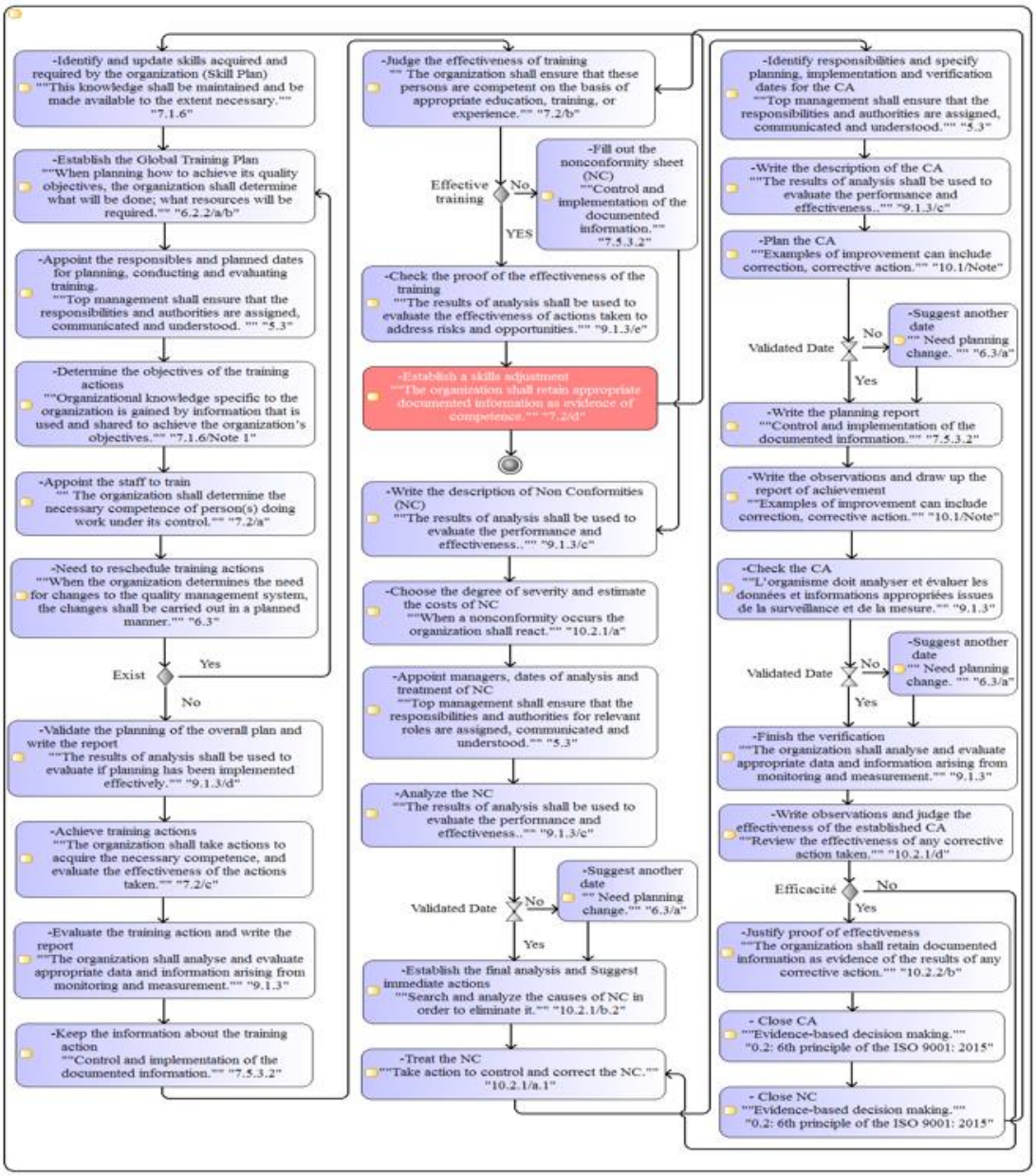
Model 1. BPMN Knowledge Requirements Launch



"Developed by the author via Modelio 3.6"

Annex.2

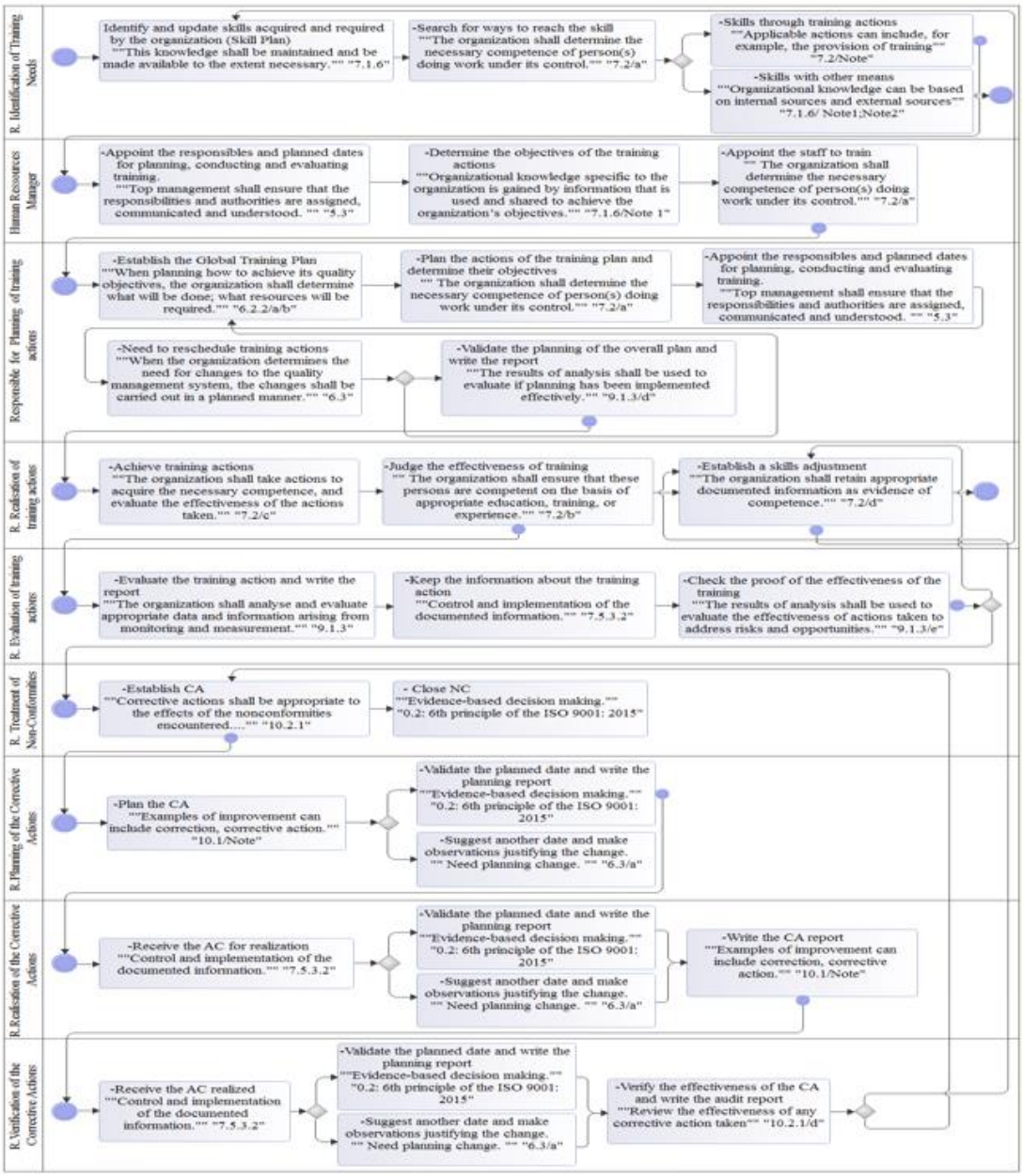
Model 2. Flowchart of skill management sequences



"Developed by the author via Modelio 3.6"

Annex.3

Model 3. BPMN of the skills management workflow



"Developed by the author via Modelio 3.6"

THE HISTORY OF PARTITION & FRAGMENTATION OF PUNJAB: 1947 TO 1966

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Punjab, the "Land of five rivers", has played a major role in the history of India and had left a deep imprint on the course of Indian History. This imprint on Indian History is due to the people of Punjab, who through their courage and patriotism have carved out an important place for themselves. To understand the nature and dynamics of Punjab history in its true perspective, it is important to study the people of Punjab; their historical, cultural and religious background and their political heritage.

In 1947, India got Independence from British rule and at the same time, it was partitioned on the basis of a two-nation theory which was initiated and campaigned by the Muslim League but later on due to the circumstances Congress also had to accept it. In this partition, Punjab had to pay a heavy price both in terms of human and territorial loss. In terms of territorial loss, the new province of Punjab was left with only thirteen districts out of twenty-nine districts of undivided Punjab, as the entire Muslim majority districts were transferred to Pakistan and the non-Muslim majority districts remained in India. India got only 34 percent of the area with 47 per cent of the population.

The joy and achievement of independence for Punjab were marred by the holocaust of partition. After partition, Punjab presented a very gloomy and downright dismal picture. "It looked as if same Promethean spirit had painted it in a conclusion deep agony. Five million refugees, distraught by harrowing memories, stalked the land without hope or faith in anything. The gloom of an earthquake hung over the province."[1]

The migration of refugees significantly altered the communal composition of Indian Punjab[2] (The boundaries of East Punjab were redefined in accordance with the Radcliff Award which was announced on 18th August 1947) In united Punjab, i.e. in Punjab before partition the Hindus constituted a minority with 26 percent of the population and the Sikhs were only 13 percent of the population But after partition, the Hindu became a majority with 64 percent of the population and the Sikhs became a sizeable minority with 33 percent of the population (1951census). The erstwhile majority communities, i.e. the Muslims were now almost completely eliminated as a political entity[3].

The partition of Punjab at the time of independence shook the administrative, economic and political machinery of the province to its foundation and brought in its wake a host of complicated problems. The flood of human misery witnessed nepotism, corruption, bribe, maladministration and communalism in the administrative services. The economy of the state had been completely disrupted as partition was a server blow to industry and business and depleted the strength of spilt labour. The pre-partition communalism and post-partition administrative chaos were nurtured by the confused policies and politics of the faction-ridden ruling party. This all left the masses in a dilemma.[4]

But soon, it was found that adverse circumstances and gruelling struggle created a capacity in them (masses), to face ominous conditions, however, formidable they might be. In no time, it was found that instead of being liabilities they became an asset to Punjab (East). The displaced Punjab farmers created blossoming orchards out of once send dominated lands. The government also extended massive assistance to the rehabilitation of the refugees. "It is sufficient to record that the Punjab which had been the earliest home of the Aryans settlers, and from whence the Vedic culture

had spread through. India proved once again to be the starting point of a new resurgence that came to the people of this country after centuries of slavery"[5]

The division of Punjab on communal lines spread a sense of indignation and frustration among the Sikhs because the hopes of creating a Sikh State in Independent India (Azad Punjab / Sikhistan) rose by the Sikh leaders and supported by the congress and Hindu leaders had not been fulfilled. The Sikhs felt that they had been given a raw deal in the distribution of territory between the Hindus and the Muslims giving the expression to this feeling, Master Tara Singh said.[6]

"Every minority except Sikhs has been given justice. The Muslim demand was Pakistan, they got it, the scheduled castes wanted representation on a population basis with the right to contest additional seats and they got it. The Sikhs demanded that they would not (like to) be dominated by any single community and they were being mocked for repeating the same demand which the Hindus supported before partition – with which the congress sympathises".

Though the changed demographic situation in Punjab was favourable to the Sikhs, in a free India which was committed to secularism, there was no separate communal representation for Sikhs. Due to this Akali Dal felt that the Sikhs as a community would have little political leverage. Thus soon after independence, the Akali Leaders started raising apprehension that in an overwhelmingly Hindu dominated state, with no special political safeguards, the Sikhs as a separate entity would disappear from time to time.[7] In the pre-partition days the separate electorate for the Sikhs and reservation of posts in government services had served as a forceful tool and motivation for stressing the distinct and separate identity of the Sikhs. It was feared that in the changed secular atmosphere, the observance of outward physical symbols by the Sikhs, which was a visible symbol of Khalsa distinctness, might get affected.[8] Thus in the newly religious-political context and on the pretext of retaining the district political identity of the Sikh community. The Akali Dal restored to the demand for the creation of a Sikh majority state within the Indian Union soon after independence. However, it differed from their earlier demand for the creation of a Sikh majority independent state. The main cause of Sikh uneasiness in free India was the rejection of Sikh claims by Hindu politicians for separate political representation on the ground that the Sikhs were Hindus and due to the resurgence of Hinduism in independent India, the Sikhs apprehended that they may engulf the minorities. This increasing unorthodoxy among the Sikhs has also been apprehended by many Sikh scholars like Khushwant Singh.[8]

In the meantime, the language question worsened the political position of Punjab as the language got liked with the communalization of politics in the province. In the ever-growing communal atmosphere, the demand for giving better place to Hindi and Punjabi increasingly gained manentum[10]. This gave rise to an anomalous position in which the spoken language of the region did not get an all-round loyalty from different sections of the people, and could not acquire the status with other languages – like Bengali and Telgu[11] and acquired.

Language, generally, is regarded as a unifying force which cuts across several sectional, sectarian and communal divisions. In the case of Punjab however, the language question further deepened the existing communal division, which overshadowed the cohesive characteristics of the Punjabis.[12] The decision to change the status of Urdu as the only medium of instruction and to replace it with Hindu and Punjabi was due to the communal atmosphere prevalent in the province and partly an account of the partition of the province since it was no longer a Muslim majority state. In pursuance of this objective, the education department of the East Punjab Government ordered that

"All education in the schools of East Punjab shall be given in the mother tongue of the children, and either Devnagari or Gurmukhi script can be used in the 1st and 2nd class, provided arrangements be made to teach Gurmukhi in the third class in school where initially Hindi is taught. The same rule is required to be observed in such schools where the initial education was in Gurmukhi."[13]

The order contained the seeds of what later come to be known as the **Sachar Formula**.

The language issues assumed its political dimension only in the year 1949, for it was preceded by the demand for the Punjabi speaking state and other concessions by the Akali

Party.[14] The question was referred to the Punjab University with the expectation that the academic would find a solution mutually satisfactory to both the communities. But the educationists proved to be as susceptible to political and religious pressures as the politicians. So in the last, the Punjab Government decided to take the mother into their own hands and decide it. And on 1st October 1949 Punjab Government submitted its proposal popularly known as **Sachar Formula*** See Appendix– Sachor Formula (on language question).

The formula was widely acclaimed by the Sikhs including the Akalis, though they criticized the right of the parent to choose the medium of instruction for the education of their children.[15] the proposals, however, met with severe criticism at the hands of the Hindu organisations like the Arya Samaj, the Jan Sangh and the Hindu Mahasabha. The conflict between the Hindus and Sikhs, however, took a sharp turn from this day onward. The Sikhs felt that the Hindus by denying the right of the Punjabi as their mother tongue wanted to gain a position of superiority over them. The Hindu communal organizations, objecting to this right of Punjabi, argued that the government by declaring Gurmukhi as the only script for Punjabis had denied to them their right to name their mother tongue. They declared that they were left with no other alternative but to declare Hindi as their mother tongue. In a heated communal atmosphere, the press carried on the campaign in the bitterest of language. The respective causes of Hindi and Punjabi were vociferously propagated and the dozed observers in the rest of the country saw that this was being carried on in Urdu.[16]

The question of the language of the state and choice of the medium of instruction in schools may not have been as difficult and complicated issues as they appeared to be subsequently but for the fact that they got mixed up with the question of the reorganization of the state.

DEMAND FOR A PUNJABI SUBA

The demand for a "Punjabi Suba" was however made in February 1948. "The real motivation for a Punjabi speaking state came after the failure of the Akali Dal to secure some provisions in the constitution of India. The Akali Dal in its memorandum to the minority sub–committee of Fundamental Right had demanded a separate communal electorate for the Sikhs; the reservation of 50 percent of the seats in the provincial legislature and 5 percent in the central legislature; reservation of seats in Delhi and U.P.; the same privileges for the scheduled caste Sikhs as are given to other scheduled casts; and statutory reservation of a certain proportion of place in the Army[17].

Master Tara Singh, the Akali leader criticized the Government of India's policy of not referring to the question of demarcating of boundaries of Punjab to the Dar Commission. Changing drastically from his earlier stance, he said, we have a culture and our literature is also in the Gurmukhi spirit we want to have a province where we can safeguard our culture and our tradition[18]. He further declared that he wanted the right of self-determination for pant in religious, social-political and other matters. He, however, made it clear that they did not want a separate and independent sovereign state. It would be a part of the federal unit which will have to give financial aid and help in their defence.

In its struggle for the achievement of Punjabi Suba, the Akali Dal employed a variety of strategies such as constitutional, infiltration and agitational[19]. The constitutional strategy involves the use of methods that are within the framework of the existing constitutionally guaranteed rights that do not violate property enacted laws and that are employed in the open views of the public.[20]

Therefore on 15th November 1948, twenty-three Akali legislators resolved that if the five statutory safeguards in their charter of demands were not conceded, the Sikhs should be allowed to form a new province of seven districts, i.e. Hoshiarpur, Jallandur, Ludhiana, Ferozepur, Amritsar, Gurdaspur and Amjbala.[21]

These demands however were not acceptable to congress or the constituent Assembly. Sikhs also were not unanimous in this separatist demand. Even Kartar Singh opposed it by saying that, "the demand was anti-national and harmful to the Sikhs and therefore, (could) not be accommodated in the secular set up of the Indian Republic ……. Besides it would still further divide the Sikh population in a much worse manner than the partition of the country 1947 did."[22]

Whereas the Sikhs were still engaged over the debate regarding Punjabi Suba and its nature, the suspicious, hostile and rather aggressive attitude of the Hindus, communalists, further complicated the political situation in Punjab. The majority of them were of the opinion that the Muslim league could achieve Pakistan because of the appeasement policy of the congress. Now that the partition was a fact and a majority of the Muslims had gone over the other side, the government of India should follow a strong policy towards all religious minorities. The Akali demand for a separate Punjabi Suba was interpreted by them as a strategy designed to create a separate Sikh state and the press other than Akali condemned the move as following the footsteps of the Muslim League[23]. In fact, it was the communal leadership of both the communities, which continued the old communal propaganda. Master Tara Singh, however, alleged that the Hindu community leaders and a particular section of the Hindu press in Punjab were responsible for the unfortunate situation and were leading the present anti-Sikh agitation.

It is also believed by certain scholars (particularly Khushwant Singh) that, the creation of PEPSU (a Sikh majority state) in 1948 provided an opportunity for meeting the demand by attaching the Sikh majority districts of East Punjab to PEPSU. In addition, the Punjab Governments decision to declare Punjab a bilingual state (with Punjabi and Hindi as its languages) gave the Akali the necessary excuse for raising their demand for a Punjabi Suba, since the spoken language of Punjab (except in the Haryana area and hilly area) was Punjabi.[24]

The demand for the creation of a Punjabi speaking state was further reinforced as a result of the disowning of their mother tongue by large sections of Hindus in the 1951 census. This aroused communal sentiments between the two communities as the Sikh felt that this was a political tactic to resist the demand for the creation of a unilingual Punjabi speaking state.

So the Akali Dal manifesto of 1952 elections elaborated the reason for demanding a Punjabi speaking state.[25] The true test of democracy in the opinion of the Shiromani Akali Dal, is “that the minorities should feel that they are really free and equal partners in the destiny of their country:

a) To bring home this sense of freedom to the Sikhs, it is vital that there should be a Punjabi speaking province with its own language and culture

b) The Shiromani Akali Dal is in favour of the formation of provinces on a linguistic and cultural basis throughout India but it holds that it is the question of life and death for the Sikhs for new Punjab to be created immediately

c) The Shiromani Akali Dal has reasons to believe that a Punjabi speaking province may give the Sikhs the needful security. It believes in Punjabi speaking province as an autonomous unit of India.

A further stimulus to the demand for a Punjabi Suba was the creation of the unilingual state of Andhra after the death of Rumulo (who undertook a fast unto death to achieve the aim) in 1953. Several leaders of Punjab after this incident declared to intensify their struggle and even threatened to go on a fast unto death.

Although the demand for Punjabi Suba or a Punjabi speaking state, has been at the forefront of politics in Punjab since the partition, its first systematic presentation was made before the state Re-organisation commission appointed by the Government of India in 1953, with Syed Fazal Ali as Chairman (and H.N. Kunzru and KM Pannikar as Members).

In a memorandum to the commission, the Akali Dal urged the formation of a Punjabi Suba by merging the Punjabi speaking areas of Punjab, PEPSU and Rajasthan on the basis of language. The memorandum emphasized that Punjabis have a distinctive common culture and a common mother tongue and they should therefore have their own state.[25]

There was vigorous opposition to the demand of the Punjabi Suba from the Hindu community, the Sikh Harijans and the nationalist leaders except for the communist party of India.

The Akali Dal characterized the allegation the Sikhs had asked for Punjabi Suba out of sinister communal motives as unjust. They further asserted that Sikhs are India's first and last and true patriots. Moreover according to Akali Dal Punjabi Suba was not going to be an independent country, but would be subject to central control.[27]

After winning the S.G.P.C election in 1953 the issue of a Punjabi Suba the Akali Dal intensified its struggle with renewed vigour. In order to curb the rising demand, the Sachar Ministry imposed a ban on the Punjabi Suba slogan, on the plea that it was endangering communal harmony in the state. The Akali Dal launched an agitation for their freedom. Due to the tremendous resentment against the repressive order government withdrew this ban on 12th July 1955. This was interpreted as a surrender by Sachar and a victory for the Akali.[28]

The state reorganisation commission, in its report submitted on September 30th, 1955 rejected the demand for Punjabi Suba on the ground that "a minimum measure of agreement necessary for making a change in the existing set up did not exist", and expressed the belief that to construct a Punjabi Suba would perhaps mean" the imposition of the will of a to construct a Punjabi Suba would perhaps mean "the imposition of the with of a substantial minority over the majority which was opposed to it.[29] It instead, recommended the integration of Punjab, PEPSU and Himachal Pradesh into are administrative units. The Akali Dal opposed the recommendation of the state Reorganisation commission tooth and nail.[30] The Akali Dal alleged that it was a conspiracy to destroy the Sikh nation and that the commission delivered the "Sikh bound hand and foot to the slavery of an aggressively communal group".[31] Master Tara Singh demanded the report as "as the decree of Sikh annihilation Sardar Hukam Singh another senior leader of the Akali Dal referred to it "as another deadly blow to the Sikhs and threatened that the Akalis would launch an agitation of peaceful negotiation failed.[33]

In February 1956 Jawaharlal Nehru invited Master Tara Singh for a negotiated settlement so that an amicable solution to this problem could be sorted out. This negotiation resulted in an agreement that came to be known as the "Regional Formula" or Nehru Master Pact. As a result of this agreement, the Regional formula was adopted in the Punjab by which the work of the state legislature was assigned to separate regional committees organized according to language. The Akali Dal agreed to work according to the formula and to merge with the Congress party for contesting the 1957 election in the Punjab legislature. Meanwhile under this formula on 1st November 1956 PEPSU was merged with Punjab and the overwhelmingly Hindu province of Himachal Pradesh was retained as a separate entity.

However, the Chief Minister, Partap Singh Kairan, under pressure from the Arya Smajist adopted delaying tactics in the implementation of the Regional Formula. The Regional Committees were constituted in November 1957, seven months after the inauguration of the new Assembly. The Chief Minister denied any special status, establishment or staff to the chairman of the Punjab Regional Committee, which caused its chairman to resign in disgust. The dissatisfaction with the working of the Regional Formula and the indifferent attitude of Kairan towards the Akali legislators brought

The Akali Dal out of the Congress-fold. Master Tara Singh, in a statement at Delhi on 15th September 1958 declared that the Regional Formula had not been satisfactorily implemented and that he was compelled to reopen the demand for a Punjabi Suba Disenchanted with the working of the Regional Formula, the Akali Dal convened the first Punjabi Suba conference at Amritsar on 12th October 1958 to revive the demand for a Punjabi Suba. The Akali Leaders (Master Tara Sigh and Sant Fateh Singh) accused. The Government having backed out of its settlement with the Akalis, and justified their demand for the creation of a Punjabi Suba.[34]

THE PUNJABI SUBA AGITATION AFTER 1960

In order to mobilise support from other parties, the Akali Dal convened a Punjabi Suba convention at Amritsar on 22nd May 1960, at which the members of the Swantantra Party, S.S.P., P.S.P. and veteran freedom fighters like Saifuddin Kichlu and Pt. Sunder Lal justified the demand for the creation of the Punjabi speaking state.

The government took pre-emptive action and arrested Master Tara Singh and of the Akali leaders, but the agitation gathered momentum as time passed which was launched by the Akali Dal on 20th May 1960,. Punjab government came down heavily on the agitators who were harassed and terrorised in several ways.[35] processions and demonstrations became the order of the day and at a

massive Akali procession taken out on 12th June 1960 at Delhi to press the demand more than 57,000 volunteers courted arrest.[36]

Despite this government made no attempt to diffuse the situation. Sant Fateh Singh, Vice President of Akali Dal took over the leadership of the Morcha after the arrest of Master Tara Singh and continued the agitation.

Sant Fateh Singh in his very first public appearance as the leader of the March cleared the position regarding the nature of the Punjabi Suba by declaring that he was for Pujbai Suba on the basis of language alone, the percentage of Sikhs or Hindus did not matter and he solemnly reiterated his faith in the Hindu Sikh Unity.[37] Sant tried to shed all the suspicion about the communal outlook of the agitation by emphasizing Hindu Sikh harmony. He borough it, in line with the country, commitment to democracy and secularism.

In order to put pressure on the government he embarked on a fast – unto death on 18th December 1960 later on, on the advice of Master Tara Singh, Sant Fateh Singh broke this twenty – two day fast on 9th January 1961 to negotiate the master with Nehru. During these negotiations, Sant Fateh Singh emphasized the linguistic basis of the demand, rather than its communal basis which made Pandit Nehru more sympathetic.

However, nothing came out of the negotiations between the Akali Dal and the Government Master Tara Singh after his release added the communal touch when he declared that the "primary motive for asking for the Suba was to protect the Sikh religion and improve the position of the Sikhs, the language question was secondary. Meanwhile, with the increasing popularity and credibility of Sant Fateh Singh, Master Tara Singh's hold on the community was loosening. In an effort to revive his lost prestige, he undertook a fast unto death on 15th August 1961 for a Punjabi Suba[38] and against the discrimination against Sikhs by the government. But the government under Nehru refused to be moved on the issue of Punjabi Suba. Finally, he ended his forty-eight days fast when the government agreed to set up a commission to investigate any discrimination against the Sikhs as this was one of the allegations by Master Tara Singh against the government. However, this commission found that there was no basis for any charge of discrimination.

The failure of the two fasts had deep repercussions on the Sikh community and resulted in the creation of a division in the Akali leadership. for breaking the fast without achieving anything both the leaders were found guilty by Panj Pioras and were ordered to perform religious penance. After this Sant formed a separate Akali Dal in 1962 and challenged the leadership of Master Tara Singh.

Meanwhile in the wake of the Chinese invasion in October 1962. Sant Fateh Singh suspended the demand for a Punjabi Suba and mobilised defense efforts in the state and even presented a cheque of Rs. 50000 on behalf of the Akali Dal towards the war efforts. This rose the position of Sant in the overall political sphere.

In 1965 he and his followers succeeded in gaining control over the SGPC for Master Tara Singh this Sant Fateh Singh Took over the leadership of the Sikhs. In the meantime, significant changes had taken place in the leadership of the congress in Punjab and at the centre.[40] the new Prime Minister Lal Bahadur Shastri modified the tough line that had been adopted by Nehru, ostensibly on the advice of Kairan. The change of regime at the centre brought a favourable climate as the new leaders were more receptive to regional demands, simultaneously the opposition to the creation of a Punjabi Suba also declined as the Hindu leaders urged the creation of a separate Hindu speaking state of Haryana and hilly area wanted to merge with Himachal.

Meanwhile, to re-establish his declining image, Master Tara Singh activated the demand for a Punjabi speaking state and put forward the new idea of self-determined political status for the Sikhs within the Indian Union. A resolution to this effect was passed at the historic General Hari Singh Nalwa Conference held at Ludhiana on 4th July 1965.

Moving the resolution Sardar Gurman Singh declared "this conference recalls that Sikh people agreed to merge into a common India nationality on the explicit understanding of being accorded a constitutional status of co-sharers in the India sovereignty with the major community, which solemn undertaking now stands cynically repudiated by the present rules of India…….. This

conference, therefore, resolves after careful thought, that there is no alternative left for the Sikh in the interest of self-preservation but to frame their political demand for securing a self-determined political status within the republic of the Union of India"[41]

This was a shrewd move by Master Tara Singh to outmanoeuvre Sant Fateh Singh and re-establish himself as the true champion of a Punjabi Suba. Sant Fateh Singh faced the challenge of the Master group very boldly and lost no time in intensifying these efforts for the realisation of a Punjabi Suba. He called upon the Union Government to create a Punjabi speaking state as a large number of states on linguistic basics had already been created. [42]

To convince Prime Minister Lal Bahadur Shastri about the urgency for the creation of a Punjabi speaking state Sant met him on 7th – 8th August 1965 and declared that he wanted a Punjabi Suba purely on a linguistic basis. But talk foiled as the Prime Minister agreed only to take steps for the advancement of Punjabi language and to look into any Sikh grievances but did not concede the real demand.

After the failure of this mission, Sant announced on 16th August 1965 from the Akal Takhat, that he would undertake to fast till death with effect from 10th September 1965, for fifteen days. If he survived the fast he would immolate himself on 25th September at exactly 9:00 A.M. In this he also got full support from the Master group. Even there was pressure from the congress Sikh legislator on the control government at this time. The outbreak of the Indo – Pakistan war on 5th September 1965 further precipitated the situation in the border state. The national leaders appealed to the Sant to give up the fast in view of the national emergency ant eh Union Home Minister announced that the whole question would be favourably considered. On 9th September 1965, the working committee of the Akali Dal advised Sant to postpone the pass till the war with Pakistan was over. After withdrawing his threat of self-immolation, Sant Fateh Singh called upon all Punjabis (and Sikhs in particular) to rise to the defence of the country.

Immediately after the cease-fire with Pakistan, the government of India appointed a there member cabinet committee, consisting of Y.B. Charan, Indira Gandhi and Mahavir Tyagi on 23rd September 1965 to consider the question of the formation of Punjabi Suba.[43] On 9th March 1966, the congress working committee adopted a resolution recommending that out of the existing state of Punjab a state with Punjabi as the state language be formed. On 18th March 1966, Sardar Hukam Singh presented his report to parliament which recommended that the Punjabi speaking region be constituted into a unilingual Punjabi state that the hill areas be merged with Himachal Pradesh and that the Haryana region is given the status of a state. The committee recommended the appointment of a commission to demarcate the boundaries between the states of Punjabi Haryana and Himachal.

On 21st March 1966 the control parliament and the cabinet accepted the demand and appointed a boundary commission to propose an appropriate reorganization of Punjab. The Boundary Commission recommended by a majority of two to one the merger of Kharar Tehsil and Chandigarh with Haryana however Chairman of the Commission S. Dutta favoured the inclusion of these two Punjab. The government of India accepted the minority report regarding Kharar and decided to convert Chandigarh into a Union Territory. The recommendation of the commission wit6h the above modifications was incorporated in the Punjab State Recognition Bill which was adopted by Parliament and received the consent of the President on 18th September 1966. As a result of this Act, Punjab was trifurcated in such a way that the Punjabi speaking areas went to Punjab, the Hindu speaking areas to Haryana and the hill areas to Himachal Pradesh. Chandigarh with its neighbouring villages was converted into a Union Territory.

Another notable feature of the Act was the creation of common links between the states of Punjab and Haryana like a common governor, High Court, University, Electricity Boards and other corporations like the state financial corporation and Housing corporations like the state Financial corporation and the Housing Corporation Apart from this, the management of the Bhakra Dam complex and other dams was placed under a centrally administered Board.[44]

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THE CONNECTION OF THE PUBLIC INTEREST WITH THE MODERNIZATION IN THE CONTEXT OF PUBLIC ADMINISTRATION IN THE REPUBLIC OF MOLDOVA: NOTEWORTHINESS AND PERSPECTIVES

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Abstract. This article examines the noteworthiness and perspectives of the connection between public interest and modernization in the context of public administration, with a focus on the state and situation specific to the Republic of Moldova, which is in a period of transition to democracy.

The aim of the study is to determine the interconnection between modernization and the public interest in the context of public administration, as two interconnected components that ensure the strengthening of the principles of a rule of law and democracy, trust in the system of government by governments, precisely with the public interest, the maturity of the decision-makers, but also the stability of the internal and external policies.

Keywords: public interest, modernization, public interest - modernization relationship, public administration, Republic of Moldova.

In recent decades, governments around the world have made fundamental changes in the administrative system. And public administration reform has been at the heart of this "modernization" process [12, p.5]. As a consequence, the ordinary public services with public administrations had to adapt to a constantly changing world, transforming their practices, people and cultures to meet the new challenges they face [4, p.7].

The complexity of social problems, typical of many societies in transition, including political and administrative problems, is primarily due to the rapid transformation of society from communist models to a liberal democracy, a market economy and the rule of law. Governing a society in transition is a multidimensional task, in which the government aims to balance the complexity of social issues, especially in the context of rapid change and adjustment to current conditions [8, p.68].

The British politician Tony Blair stated: "Modernizing the government means continuing to better respond to the needs of citizens" [7, p.3]. Finally, in the opinion of the qualified and trained civil servants, the modernization of public administration has several meanings: reform, reorganization, improvement and continuous innovation of the organization and functioning of administrative structures, through the use of information technology and adaptation of electronic systems useful to the population, carrying out an efficient decision-making process in order to fulfill the mission of public administration to meet the public interest.

The administrative system has the task of providing a wide range of public services to the citizens it serves. And a flexible and modern administrative system that can quickly and efficiently adapt to the needs of the population, whilst also maintaining stability and sustainability when speaking about the constantly changing societal trends and the high level of meeting the requirements of local communities, the balanced targeting of funds for the most effective programs and policies aimed at meeting the public interest [11, p.3]. Thus, modernization becomes the component that ensures the increase of the economic level, the improvement of the level of services provided, the identification of those tools, mechanisms and solutions to overcome the problems and challenges that the society faces, by making the right decisions.

From the researcher V. Saca's point of view, an analysis of the public interest adapted to the requirements of administrative science becomes necessary, but also effective when we relate it to

the conditions of a relatively stable society, with well-defined goals and objectives, important to be taken over and used creatively. on the soil of the changing society to cope with the rigors of modernizing the administrative system [5, p.12]. In this context, the researcher V. Saca defines the public interest, as a *sui generis* phenomenon, as a totality of objective and subjective characteristics of public actors, members of the public related to the factor of necessity, utility, advantage, purpose, value that substantially influences their behavior and social actions - significant. The author describes here the chosen attitude of the members of the public and of the public actors in relation to certain phenomena, processes, attitudes based on certain positions, needs and well-defined goals [6, p.38].

The execution of the public interest has a considerable significance both, theoretically and empirically, in the process of public administration, this fact being recorded including in the normative framework of the Republic of Moldova, but also the international acts and treaties to which our state is a party. Thus, according to the 2030 Agenda for Republic of Moldova Sustainable Development, human interests are placed at the center of the development process, which could be achieved in a sustainable way only by empowering people to participate, to contribute, and to benefit from following economic, cultural, social and political development on the basis of a common position in which all human rights and freedoms are respected [1, p.8]. In this context, the notion of public interest is conjugated with the concept of modernization, which involves reforming vertically and horizontally, theoretically and practically, internally and externally all relations, elements and interconnections between key components. At the same time, we can identify the "chosen attitude of the members of the public and of the public actors" in the context of the processes carried out in the society, described above by the author V. Saca in his own definition.

In Article 18 of the Administrative Code of the Republic of Moldova, the public interest concerns the rule of law, democracy, guaranteeing the rights and freedoms of persons, as well as their obligations, meeting social needs, fulfilling the powers of public authorities, functioning legally and in good conditions [2]. Each approach has its specificity and origin, essential elements that we find in the content of the Fundamental Law of the Republic of Moldova (Constitution of the Republic of Moldova, 1994). Ultimately, the public interest is the common interest, realized in favor of the whole society, which ensures the interrelationships and interconnection between the members of the public, and the results ensure the harmony and the state of well-being in the society. We find that each treatment constitutes similar or distinct features and meanings, with subjective or objective reasoning and direct or indirect results - but which in essence do not distort the basic meaning of the public interest.

The content and evolution of the complexity of the public interest in correlation with the modernization of public administration, depends on a set of factors (European standards, the trend towards globalization, economic and social crises, historical conditions, etc.) that directly influence the system of administration and democratization. .

The literature includes several approaches to the theory of modernization: the institutional approach, the behaviorist approach, the structural-functional approach, etc., which elucidate the idea of promoting substantial changes, qualitative, political system and social system, changes that include certain processes democratic and consistently reflects the content of political modernization [9, p.73]. Author S.P. Huntington defines modernization as industrialization, urbanization, education, wealth, social mobilization, and more complex and diverse occupational structures [3, p.110].

In the author's opinion, the attitudes, values, knowledge and culture of people in a modern society differ considerably from those in a traditional society [3, p.111]. At the societal level, modernization enhances the political, military, and economic power of society as a whole, and encourages its citizens to trust their culture and assert their cultural identity [3, p.126]. The opinion proposed by the author S.P. Huntington, in view of the process approached (modernization), clearly expresses the correlation with the public interest, as the modernization of the administrative system involves restructuring and reorganization on the dimensions: economic, social, political and

cultural, alignment with the requirements of the population with values, culture and discernment. prosperous.

In conclusion, we mention that the public interest has a colossal value for the theoretical but also practical arsenal in the field of administrative sciences, gaining the quality of mobile of social progress and modernization of public administration.

Although the experience of the Republic of Moldova is ambivalent, confronting and aspiring to become an immune and democratic society, adapted to challenges and trends, we consider that the efforts made for modernizing the public administration and ensuring decision-making transparency are considerable and visible even since independence. Focusing on the problems, interests and aspirations of members of society is a key objective in the work of public administration authorities. However, there is a need to develop new paradigms for the development of the governance system adapted to the new standards, taking into account the financial possibilities, organizational capacities, integrity and professionalism of public actors, as well as societal relations. In this context, modernization, as in the case of several states, is an opportune solution, which offers us a series of development possibilities. However, the consensual, multidimensional and interconnected aspects and circumstances of the difficult reality of the society in transition, as well as the constantly evolving and amplifying issues, denote the imperative to readjust, renew and modernize the tools and mechanisms for managing the situations they face. society on the one hand, and public administration on the other, and the construction of a new trajectory, with new rules, standards and values.

Finally, the terms public interest-modernization in the context of public administration are in a relationship of interdependence and complementarity, as demonstrated by some meanings and approaches elucidated in the present study.

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Technical sciences

DECISION-MAKING SYSTEM BASED ON VOICE-EMOTIONAL COMMANDS

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The automated and robotized systems represent a real danger for human health and life. Being of a more mechanical nature, these systems lack the ability to react to vocal or vocal-emotional commands that would intervene in the process of functioning for the purpose of the protection of human health and life. The notion of vocal or vocal-emotional dialogue is specific only to human beings who have sufficient intellect and a language of communication common for all parties involved in the dialogue process. For any dialogue process, apart from the vocal-informational content, a very important role is played also by emotions, or rather the vocal-emotional content, which in most cases presents an important decision-making factor as a result of the dialogue.

Assigning a level of artificial intelligence to the automated and robotized systems, it becomes possible to conduct a Human-Machine dialogue that would ensure the exchange of information useful for both parties involved in the communication process. Making an association between the Human-Human and Human-Machine dialogue systems, it can be stated that the most effective methods of the conduct of a dialogue for the Human-Human system is the vocal communication. It is obvious the fact that for a human being, from a Human-Machine system, the vocal communication would be more convenient as well. An important role in the Human-Machine communication is also played by the factor that in the dialogue process not only vocal information can be transmitted, but also the vocal-emotional information that essentially extends the efficiency of the dialogue between Human and Machine.

Now, ten years ago, the notion of emotion was perceived and studied only from the point of view of the manner in which the individuals are influenced by the emotions they experience [1]. The target object of the research was individuals, especially the manner in which emotions of a person influence the knowledge, attitudes, behavior and decisions of other persons. The theory of social information was developed, which assumes that emotional expressions produce interpersonal effects by triggering of affective reactions and inferential processes in the form of objectives, depending on the manner of the perception of emotional information. These results were validated for various domains of social influence, including negotiation, leadership, and change of attitude, conformation and compliance in work teams. These researches demonstrated that emotions represent a set of tools of social influence that are based on different forms of emotional expression that are in a process of continuous evolution.

At the core of Human-Human relationships is the emotional informational social model [2], which highlights not only negative or positive emotions for decision making, but also the interpersonal effects, the cooperative or competitive nature of the results of dialogue.

With the development of the robotized systems and information technologies, new methods and models of Human-Machine (Human-Robot) interaction based on Artificial Intelligence were developed [3, 20, 21]. This trend is specified also in the strategy Industry 4.0 [4,5], which aims to be realized through the development of Multi-Agent smart enterprises [16-19], the integration of IoT and IIoT services [6], physical cybernetic systems and digital transformation. [7].

It is worth mentioning the fact that there are still some problems with Human-Robot vocal communication. Especially in cases where the vocal-emotional communication Human-Robot is necessary. This problem is also mentioned in various scientific papers, which are oriented to the settlement of some aspects specific to the field of application [8, 9, 10]. In particular, in the paper [11], it is proposed the projection of a voice-controlled robot used for fire extinction.

At the core of a sound-based Human-Robot communication process is the acquisition, processing and recognition of speech that has the functions to transform the sound waves into a set

of information that includes numbers, letters, words, sentences and their characteristic parameters [12]. Examples of such types of systems based on Human-Machine voice interaction are presented in the papers [13, 14, 15] where the systems are described that provide control with electronic, electrical or robotic devices based on voice commands with the application in various fields. The disadvantage of these systems is the fact that the use of additional devices is necessary for the recognition of speech and generation of commands in the form of text or action.

Statement of the Research Problem

The issue of the automatic recognition of emotions in speech is multidisciplinary and current, offering the perspectives of application in various fields of science, technology, cybersecurity, access control and security of robotic systems for the protection of health and life of human beings.

Of the above-mentioned areas, the most important is the application of automatic speech recognition for the protection of health and life of human beings that are part of the technological process of robotized systems that include the moving mechanisms, electrically powered devices (robotized assembly lines, conveyors for assembly and classification of objects, mobile robots, etc.).

In the given paper it is investigated a method of the application of the automatic recognition of emotions in speech for the protection of health and life of human beings involved in the robotized technological processes.

Whether the robotized technological process is defined RTP (1):

$$RTP = \{P_i, i = 1,2,...,N\}, \quad (1)$$

where: P_i. is the set of stages (phase) of the robotized technological process.

Each stage P_i is characterized by the expression (2):

$$P_i = \{X_i, D_i, U_i, H_i\}, \quad (2)$$

where: $X_i = \{x_{i,j}, j = 1,2,...,M\}$ - is vector of state of stage P_i; $D_i = \{d_{i,j}, j = 1,2,...,M\}$ - is vector of decision models defined for stage P_i; $U_i = \{u_{i,j}, j = 1,2,...,M\}$ - is vector of action on stage P_i; $H_i = \{h_{i,j}, j = 1,2,...,M\}$ - it is vector of decision-making models that identifies a danger (hazard) for human health or life apparent in the stage P_i.

The general model of the robotized technological process is defined by the expressions (3):

$$\begin{cases} X = \bigcup_{i=1}^{N}(X_i), \bigcap_{i=1}^{N}(X_i) \neq \varnothing; \\ D = \bigcup_{i=1}^{N}(D_i), \bigcap_{i=1}^{N}(D_i) \neq \varnothing; \\ U = \bigcup_{i=1}^{N}(U_i), \bigcap_{i=1}^{N}(U_i) \neq \varnothing; \\ H = \bigcup_{i=1}^{N}(H_i), \bigcap_{i=1}^{N}(H_i) \neq \varnothing. \end{cases}, \quad (3)$$

The functionality of the robotized technological process RTP is defined by actions U obtained from the expression (4):

$$D_i : X_i \to U_i, \quad (4)$$

In exceptional cases of danger to human health or life, decisions shall be taken on the basis of expression (5), which passes the robotized technological process in the increased security mode, which may lead to the termination of the robotized technological process:

$$H_i : X_i \to U_i^s, \quad (5)$$

The objectives of the researches conducted within this paper is the development of the decisional models H triggered by the vocal-emotional expressions uttered by Human that would ensure the passage of the robotized technological process in the increased Security mode on the basis of the actions performed with the vector U^s.

Synthesis of the Decision-Making System Architecture

The control systems with the robotized technological processes present the hierarchized distributed computing architectures. At the lower level of the hierarchy are placed a great number of local control devices (Local Decisional Devices) connected in a communication network and a computing system for supervision, located at the upper level. The local control devices function in parallel-concurrent manner communicating with each other by the status and control parameters. Conceptually the system for making decisions for emergency intervention on the basis of emotional voice commands is oriented to be integrated into the architecture of the already existing control system. In the Figure 1 it is presented the architecture of the decision-making system based on vocal-emotional commands for emergency interventions.

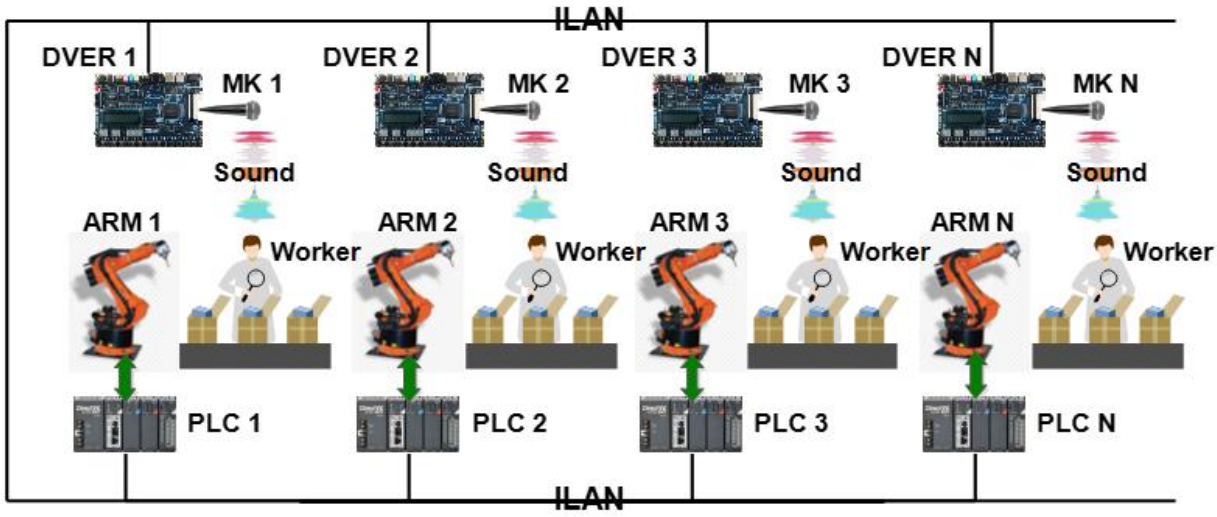

Figure 1. Decision-Making System Architecture based on Voice-Emotional Commands for Emergency Intervention

The architecture of the system includes:

- Multitude of robotic arms $ARM_1 - ARM_N$ that performs the assembly operations in accordance with the technological process (1);
- Multitude of programmable logic devices $PLC_1 - PLC_N$ that controls the activities performed by the robotic arms ARM;
- Multitude of workers *Worker* that are part of the technological process and supply the operations not performed by the multitude of robots ARM;
- Multitude of devices for recognition of emotional speech $DVER_1 - DVER_N$ to which a microphone is connected $MK_1 - MK_N$ for the acquisition of sound waves generated by the multitude of workers;
- Multitude of sound waves *Sound* generated by workers in exceptional cases;
- Industrial network *ILAN* intended for the organization of the data exchange between the system components ($PLC_1 - PLC_N$ and $DVER_1 - DVER_N$).

The manner of functioning of the system of making decisions on the basis of vocal-emotional commands is as follows: in exceptional cases the workers involved in the technological process will generate the sound waves that are received by the devices for recognition of emotional speech DVER. The DVER device that will identify a command defined in the list of commands will generate a packet that will contain the command of the stopping of the technological process and will transfer it to the ILAN network. Each PLC receives the packet with the command from the ILAN network, and executes this command on the basis of the algorithm of the stopping of the technological process. In this manner the serious accidents possibly appearing in the robotized technological processes will be reduced.

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LIFE DYNAMICS AS LANGUAGE EDUCATION AND INTERCULTURAL COMMUNICATION METHOD FOR THE DEVELOPMENT OF SOFT-SKILLS AMONG UNIVERSITY STUDENTS

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Abstract. Students' language and communication skills and leadership abilities in today's times are focused on strengths management. Life Dynamics begins by identifying the individual's basic orientation to life, or personal style. Based on this foundation of self-knowledge, powerful strategies are manifested, and these enable individuals and groups to work more effectively together as they achieve better results in teams. Graduating students of liberal arts and education of Jose Rizal University are encouraged to maximize their potentials by use of their soft-skills.

Graduating students of Jose Rizal University are given a series of context specific surveys in language and communication. The surveys measure behavioral style preferences as it is essential to establish context. As the graduating students manage their communication skills, they become aware of their preferences in managing their strengths as they begin to implement the developmental strategies that will have an immediate impact on productivity.

In coordination with the Student Development Office (SDO) and the College of Liberal Arts, Criminology, and Education (ACE) of Jose Rizal University, Life Dynamics resulted to learning activities that are carefully sequenced so that graduating students can build confidence in acquiring relevant language and communication skills, leadership, perspective, and insights.

The program termed as ASCEND (Achieving Excellent English, Self-Awareness for Behavioral Management, Communicative Competence for Professional Purposes, Enhancing People's Capacity, Nature of Communication, Discipline of Communication) yields enormous productivity improvements that can be realized using common language to communicate, thus enhancing productivity among graduating students of Jose Rizal University to develop soft skills for campus sustainability.

Keywords: Communication, flexible modalities; language education, leadership, lifelong learning and sustainable development

1. Introduction

Language and communication skills are one of the elements of standard skills that are critical among college students. The university's role in producing graduates in a variety of fields to fulfill the industry needs does not only focus on academic achievement, but also on generic skills or "soft skills" required for them to compete in the global market. Furthermore, employers now place great importance on generic skills and personality in choosing their future employees. Mastery of technical skills alone is no longer adequate for employees in the highly competitive marketplace (Lazarus, 2013) of the 21st century. The need for individual soft skills has taken on heightened importance (Seetha, 2014). The most valuable employees in the organization have a mix of both hard and soft skill competence (Griffith & Hoppner, 2013).

Life Dynamics is a method that helps individuals, teams, and organizations improve communication skills, productivity, and results by working more effectively together. This organizational development tool support people to value and manage their strengths and those of others to achieve greater satisfaction and better outcomes, take advantage of people's strengths to create high performing organizations that deliver results, and create an exchange between people where they celebrate their differences so that they all feel comfortable and do well together. It begins by identifying the individual's basic orientation to life, or behavioral style. Based on this

foundation of self-knowledge, it offers powerful strategies that enable individuals and groups to be more productive in their work and more influential when dealing with key people. People behave using the four basic styles, which are based on the four basic ways of how humans interact: GIVING, TAKING, HOLDING, and DEALING, in two conditions, FAVORABLE, when things are going well and UNFAVORABLE, when things are in stress and conflict and six strategies for making CHANGE – ways to deal with other people effectively and address the things that get in the way of being effective.

Graduating students in the College of Liberal Arts and Education of Jose Rizal University are given life dynamics surveys, a self-reporting assessment that provides participants specific feedback for personal and professional development that stemmed from language and communication skills and competence that will give the graduating students a clear concept of their strengths, translating them into productivity on campus sustainability that will help not only the university but also the community.

The aim of this paper is to provide a view on the use and application of Life Dynamics that resulted to ASCEND as language and communication and leadership tools for graduating liberal arts and education students of Jose Rizal University to develop soft skills for campus sustainability.

2. Methodology

This study integrates the use of Life Dynamics, Taga Innovation in the application and implementation of the programs for graduating students of liberal arts and education to further other programs in campus and community sustainability. The researchers used mixed methods, qualitative and quantitative methods, participant observation, in-depth interviews, and focus groups-discussion. A qualitative research design is concerned with establishing answers to the whys and hows of the phenomenon in question. The strength of qualitative research is its ability to provide complex textual descriptions of how people experience a given research issue. It provides information about the "human" side of an issue – that is, the often-contradictory behaviors, beliefs, opinions, emotions, and relationships of individuals. (Denzin, 2000). The underlying reason for carrying out any qualitative research is to gain a richly detailed understanding of a particular topic, issue, or meaning based on first-hand experience. This is achieved by having a relatively small but focused sample base because collecting the data can be rather time consuming; qualitative data is concerned with depth as opposed to quantity of findings. (www.djsresearch.co.uk/glossary/item/Qualitative-Research-Design). The Life Dynamics survey is also being used. It is a self-reporting assessment that takes approximately 15 minutes to complete. There are no right, or wrong answers and the results provide participants specific feedback for personal and professional development For contextual and situational aspects, there are a series of context specific surveys with topics ranging from language and communication styles to leadership styles. The surveys measure behavioral style preferences, which may change in different environments, so it is essential to establish context. The survey is a contextual assessment of behavioral styles, in other words, "what you do", as opposed to a static review of your personality type, "who you are," translating action and productivity skills to develop and implement campus sustainability programs that channel to the community.

3. Findings and Discussion

Life Dynamics resulted to **ASCEND (Achieving Excellent English for the Professional Environment, Self-Awareness for Behavior Management, Communicative Competence for Professional Purposes and Intercultural Sensitivity, Enhancing people's economic capacity and people's coping strategies for reducing disaster risk, Nature of communication, principles and functions for values clarification, Discipline of communication for leadership and soft skills for campus and social sustainability)** as language and communication and leadership tools for graduating liberal arts and education students to develop soft skills for campus sustainability, including community sustainability. This is an integration of education, innovation, and leadership. **ASCEND** trains university students to do active community participation. For instance**,** if their

local community faces a particular social problem, they can use their skills to research the causes and possible solutions of the problem, work with others by listening and collaborating on developing a solution, and then present their views and solutions as citizens to their community leaders.

Graduating liberal arts and education students at Jose Rizal University all have undergone **ASCEND** for them to be holistic community leaders. The primary purpose of **ASCEND** is to develop individuals holistically for them to serve their communities with their innate sense of service and purpose. At the heart of all human functioning is the self. The best solutions to organizational and leadership issues require self-awareness as an essential first step. Deeper self-awareness leads to self-acceptance and then self-esteem. As individuals gain self-awareness and self-esteem, they become more open and honest with their co-workers Facilitators of **ASCEND** have different ways to incorporate soft skills into curriculum: Build in personal & facilitated reflection, connect the dots between lessons and life, personal relevance to student experience, hands on application of information, solve real problems/ puzzles, interview practice - situational/ behavioral based, create marketing campaigns, sustainability campaign management programs, students create assignments based on Instructor provided learning outcomes, case studies of current topics and trends and frequent benchmarks, progress checks to meet deadlines.

4. Conclusion

ASCEND resulted to the human element factor of all students. As language and communication and leadership tools, graduating students of liberal arts and education students of Jose Rizal University acquire and develop soft-skills for campus sustainability that transcends towards community. True to the university core values, being responsible, courteous, considerate, and living in utmost integrity, ASCEND develops accountability, self-regard, responsibility, openness, and role-fit of purpose and service. The human element is what we need to have a firm grasp on campus sustainability. The elements of awareness from life dynamics have developed to a series of psychometric instruments for **ASCEND**. Each element measures one aspect of a person or relationship. Together, these instruments comprise the backbone of **ASCEND**. The purpose of all of the elements of awareness is to provide information for expanding self-awareness firsthand. Increased self-awareness improves understanding of why people behave in the way that they do, how they interact, and the relation between behavior and consequences in the personal and professional environment. The result is greater effectiveness as students, leaders, managers or team members. The elements of awareness in **ASCEND** are integrated into human element programs and combined with a variety of experiential methods to form a holistic, transformational learning experience that leads to profound improvements in individual, team, and organizational performance and better results to further develop, implement, and serve in campus sustainability programs integrating to social and community sustainability. Using **ASCEND** as language and communication and leadership tools for graduating liberal arts and education students of Jose Rizal University further translates values clarification in the contextual and situational human elements in developing soft skills bringing forth execution culture and actionable ways for campus and community sustainability.

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Technical sciences

INFLUENCE OF PRESSURE ON CHARACTERISTICS METAL - SEMICONDUCTOR INTERFACE BOUNDARIES

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In recent years, much attention has been paid to the study of the properties of impurities that create various defect centers in semiconductors due to the significant role of various impurities in the formation of the properties of Si – the main material of semiconductor micro- and optoelectronics. In addition, it was found that various high-temperature treatments (HTT) lead to a change in the defective structure of monocrystalline silicon [1]. At the same time, various associated states of technological impurities are formed, for example, oxygen atoms in silicon. But, despite the huge experimental material, there are still unexplained issues related to the interaction of various impurities with uncontrolled impurities and structural defects in silicon and their influence on the parameters of semiconductor devices.

One of the main requirements for semiconductor devices is the reliability of operation and the stability of their characteristics in relation to various external influences. In this regard, we have carried out studies of the effect of comprehensive hydrostatic compression on the relaxation characteristics of metal-semiconductor structures made on the basis of crystalline silicon with different resistivity.

In this regard, we have carried out studies of the effect of comprehensive hydrostatic compression on the relaxation characteristics of metal-semiconductor structures made on the basis of crystalline silicon with different resistivity.

Careful temperature control is required to measure electrical resistance. And to measure mobility, before it is necessary to determine changes in the concentration of carriers, it is necessary to find a way to accurately correct for changes in mobility. Corrections to mobility can be made either by extrapolating the pressure coefficient for mobility measured at higher temperatures (where the electron concentration does not change under pressure, since all impurities are ionized [2]), or by calculating changes in pressure coefficients for parameters describing mobility (if they are known).

The pressure coefficients for ionization determined by changes in the concentration of impurity carriers for silicon were studied in [4]. These coefficients are small, but they coincide with the values calculated theoretically and by the pressure coefficients for the effective mass and the dielectric constant found in other experiments [3].

A lot of experimental data on ionization energy and charge were obtained from measurements of photoconductivity and the transfer phenomenon. From spin-resonance measurements we get some information about the atomic structure. However, in general, we know very little about the details of wave functions and cannot explain the location of energy levels. Pressure measurements may eventually prove useful for constructing a theoretical simulation of impurity states. The situation concerning the study of the influence of comprehensive hydrostatic compression, we described in detail in [6]. Metal-semiconductor structures (Schottky diodes) are widely used in microelectronics, both as independent devices and as components of most modern semiconductor devices and integrated circuits [1]. At the same time, discrete Schottky diodes are a convenient object for studying changes in the properties of semiconductor materials under external influences [2-5], which is due to the simplicity of manufacturing diodes and the unambiguity of the interpreted results.

This paper presents the results of an experimental study of the influence of pressure on the characteristics of Schottky diodes manufactured on the basis of n-Si<Ni>. Crystalline silicon of electronic conductivity type (KEF-200, with crystallographic orientation <111>) was used as the starting material. The plates were subjected to heat treatment at a temperature of 1250 ^{0}C for 2 hours, followed by rapid cooling (>200^{0}C/min.) Schottky diodes were manufactured using vacuum atomization of Au on the surface of silicon wafers. The area of the metal contact was $7{,}1.10^{-2}$ cm^2. Some of the manufactured diodes were subjected to comprehensive compression to pressures of 70 kBar.

Changes in the parameters of the diodes were controlled by dark volt-farad characteristics measured by the bridge compensation method at a frequency of 150 kHz. The temperature of the diodes during the measurement stabilized with an accuracy of 0.5^0 C.

The measurements showed that the measured capacitance of the diodes weakly depends on the magnitude of the applied voltage, and when cooled to -80^{0}C, it decreases to the value of the geometric capacitance C_g.

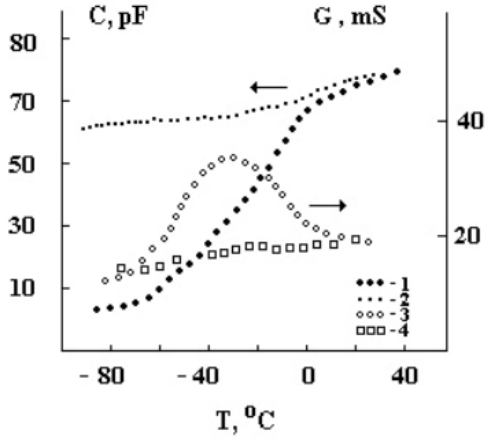

Fig. 1. Temperature dependences of capacitance (1) and conductivity (2) of one of the studied Schottky diodes before (1,2) and after (3,4) pressure exposure [6].

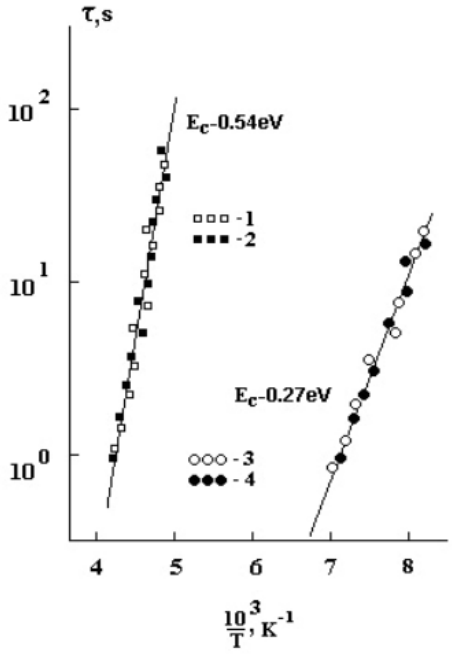

Fig.2. Temperature dependences of constant relaxation times for two (1,3 and 2,4) Schottky diodes subjected to a pressure of 4 kBar. Solid line $\tau(T)$ dependencies according to [7].

Figure 1 shows the temperature dependences of capacitance (1) and conductivity (2), measured by a parallel replacement circuit of one of the studied diodes at a reverse voltage of 4 V. Thus, measurements under pressure first of all make it possible to separate that part of the temperature coefficient of the parameter, which is due only to the expansion of the lattice, from the additional contribution, which is the actual temperature effect [4]. This behavior of the capacitance and the presence of a maximum on the temperature dependence of the diode conductivity, in accordance with the theory developed in [6-8], indicates overcompensation of the base region of the studied diodes. In this case, the ratio Na > Nm is performed between the concentrations of the acceptor deep center Na and the donor shallow center Nm.

Using the assumptions proposed by the authors of [6] and the equivalent circuit of a diode from a recompensated semiconductor [8], the following expression can be obtained:

$$1{,}15\ \ \lg A = 2{,}3\ \lg\left(\frac{\omega\varepsilon d}{q\mu_n N_m}\right) + \frac{E_c - E_a}{kT} \qquad (1)$$

where $A = \frac{C^{-1} - C_b^{-1}}{C_g^{-1} - C^{-1}}$, C is the measured capacitance, C_b is the barrier and C_g is the geometric capacitance of the diode, E_c is the energy corresponding to the bottom of the conduction band, E_a is the activation energy of the compensating impurity, is the cyclic frequency, is the dielectric constant of the semiconductor, is the mobility of the main charge carriers, d is a dimensionless parameter.

Neglecting the temperature dependence of the parameter $(\omega\tau_0 d)$, which is equivalent to neglecting the temperature dependence of the mobility of the main charge carriers, by the tangent of the inclination angle (1), we find the activation energy of the compensating deep center. The paper [6] shows the temperature dependences of parameter A for two of the studied diodes, according to which the ionization energy of the compensating center is E_C - $0{,}27 \pm 0{,}03$ eV. Temperature dependence of parameter A, for two (1,2) diodes studied. A solid straight line is a similar dependence according to [7]. In all diodes subjected to comprehensive compression to pressures of 1÷4 kBar, in increments of 1 kBar, with an exposure of 10 minutes in each interval, the temperature dependence of the capacitance weakens, and the maximum on the temperature dependence of the conductivity is gradually smoothed out. When a pressure of 4 kBar is reached, the temperature dependence of the capacitance becomes comparable to the temperature dependence of the diffusion potential (see Fig. 1 dependences 3 and 4). This behavior of the capacitance of the diodes indicates the removal of compensation and the fulfillment of the condition $N_m > N_a$. Control measurements using the method of isothermal relaxation of capacitance [8,9], the applicability of which is possible under the condition $N_m > N_a$, showed that in diodes subjected to a pressure of 4 kBar, there is a recharge of two deep centers with ionization energies of E_c - 0.27 ± 0.03 eV and E_c -0.54 ± 0.03 eV. Temperature dependences of constant relaxation times for two Schottky diodes subjected to a pressure of 4 kBar are shown in Figure 2. Comparison of the obtained dependences with the data of works [7,8] showed very good coincidence, i.e. in [7,8] and in our case, there was a recharge of identical [9] centers.

Considering that the diodes described in [7] were created using boron diffusion, and in our case silicon plates were subjected only to similar thermal effects, the following conclusion can be drawn. The centers observed in the diodes studied by us and described in [7,8] have the same nature. The effect of pressure, without changing the structure of the center, leads only to a decrease in its concentration. Note that the capture cross-section of the main charge carriers does not change when exposed to pressure, which follows from the immutability of the dependencies **τ(T)** in diodes, both in the presence of compensation and when it is removed. In Figure 4, we will consider in more general terms the use of measurement under pressure, the precipitation of oxygen atoms occurs, that is, free interstitial oxygen passes into the second phase with the formation of SiO_2 particles [12]. Which on an n-type semiconductor, if exposed to strong electric fields, many electrons quickly gain energy sufficient to excite 0.2 eV or higher above the edge of the conduction band. In this case, it is essential to know the position of all higher minima for a complete understanding of the effect. The application of 12 kBar of pressure changes the position that oxygen atoms settle on clusters of SiO_2, as a result of which they probably lose electrical activity.

It can be seen from the figure that at 12 kBar the pressure is lower than the saturation of J - V characteristics, but at a lower pressure there is saturation. The analysis of the obtained results shows (Fig.3) that when a pressure of up to 12 kBar is applied to the diode structures we studied based on n-Si<Ni> containing impurity centers in the semiconductor volume, a monotonic increase in resistivity occurs in them, in contrast to the data of [10]. From this we can conclude that the centers we observe are structural defects of the semiconductor caused by its rapid cooling.

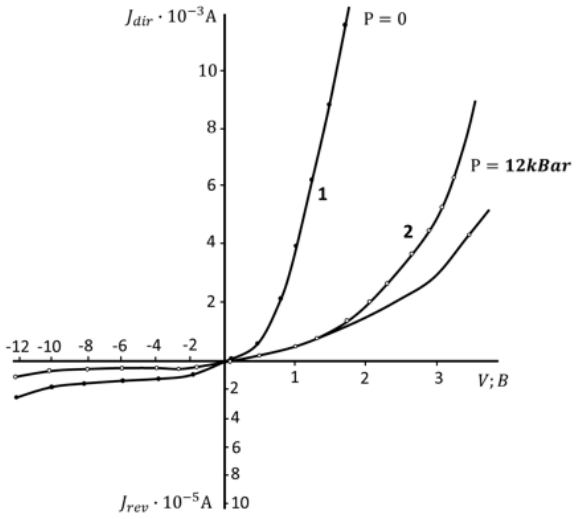

Fig.3. VAC of Schottky diodes before and after exposure to all-round pressure.

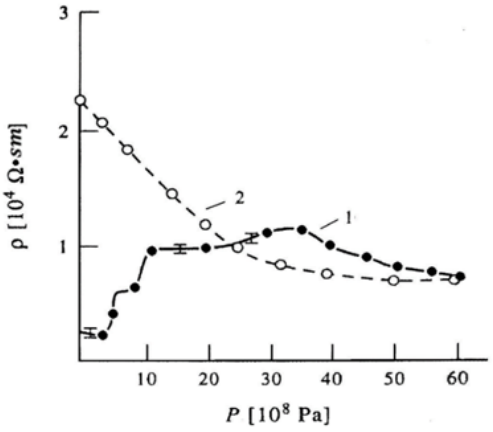

Fig.4. Strain resistance of n-Si<Ni> samples under comprehensive hydrostatic compression [11]. (1 - as P increases, 2 - as P decreases).

However, as the pressure increases in the range from 12 kBar to 38 kBar, the change in the resistivity of n-Si<Ni> samples under the influence of pressure (see Fig.4 dependences 1 and 2) has a non-monotonic character with the formation of a maximum at P ≥ 35 kBar. The formation of this maximum is explained by the fact that despite the high solubility of nickel atoms in silicon ($7 \cdot 10^{-17}$ cm^{-3}), the main part of them (99%) is in the crystal volume in the form of electroneutral atoms [11], forming impurity precipitates, and a small part of the Ni atoms ($5 \cdot 10^{-14}$ cm^{-3}) is electrically active. These atoms create two acceptor levels in the Si band gap (E_v+ 0.2 eV and E_c – 0.4 eV). And with a further increase in pressure (P>38 kBar), the resistivity will noticeably decrease. Therefore, it can be assumed that the experimentally observed nonmonotonicity in the dependences $\rho=f(P)$ is the consequence of two counter processes: the first is a decrease in the band gap and a change in the ionization energy of deep levels, which leads to an increase in conductivity, and the second is the decay of impurity precipitates with an increase in the concentration of electrically active centers, which are displaced from the semiconductor volume under pressure and changing the spectrum of the surface charge distribution at the metal-semiconductor interface. Mechanical stresses that stimulate the gettering of thermal defects from the semiconductor volume, or impurities localized in the metal-semiconductor transition layer and interacting with surface states may be responsible for changing the properties of the interface under the influence of pressure.

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SMART PEDAGOGY AND GEOGRAPHIC INFORMATION SYSTEMS

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Society is currently facing various challenges posed by technology and the various digital solutions that open up new opportunities. However, for information technologies to be useful and efficient, certain skills, acquired including through training, are also required. The success of training and the subsequent application of competences is closely related to understanding the importance, necessity and possibilities of application. It has already become clear that the vision of the use of information technologies in research, as in everyday life, must transform, because technological progress is current and constantly developing, not something that we should expect in the future.

One of the most used opportunities offered by the development of information technologies in geography, are the geographical information systems (GIS).

Given that the GIS field is relatively new and is experiencing an accelerated development, many of us are in a hurry to reach the GIS field, without having had a design training in our formal education. But the openness to new ideas, as well as the desire for knowledge, pot create graphic and cartographic materials with a well-adapted design, which uses space wisely, emphasizes the uniqueness of the map data and the material presented (Linda, 2019). However, most of the time, this is not enough, or not everyone has the ability to "couple" their creative brain with the analytical brain, in order to succeed in creating truly qualitative products.

Today, the pressure on authors of cartographic materials is very high. Due to the fact that more and more people have at hand the map technology by using Google Earth, Microsoft Virtual Earth, MapQuest, etc. the most efficient, complete and accessible maps are always in view, and for the user it does not matter the experience of those who make the maps available. The GIS domain has matured to a point where not only is it used more and more, but it is also challenged more and more.(Peterson, 2009)

Modern GIS emerged as scientists began to apply computerized approaches to data analysis within their respective disciplines. Geographers/cartographers, computer scientists and scientists in the field of natural resources are among those who have contributed to the rapid growth and adoption of this technology. Due to the convergence and synergism between remote sensing and GIS, scientists and managers have gained an ability to understand natural systems in ways that were not previously possible (Clay, 2011). As a technology, GIS has advanced a lot: from cartographers who wanted to apply computerized computing methods in map making to the constantly developing toolbox that is today.

As software applications become more and more a part of people's lives, the concepts of location and space are becoming more and more important. Developers are increasingly getting into the situation of working with location-based data. Maps, geospatial data and spatial calculations gradually acquire the role of component of the repertoire of daily programming. Initially, the concepts and geospatial development were limited to experts in geographic information sciences. While Google Maps, increasingly popular, meant at first the simple visualization and manipulation of a map, the advanced personalized display and processing of geospatial data was accessible only to those with special skills in using a professional GIS system. All this has changed with the advent of freely available tools for handling and displaying geospatial data. Now, anyone can learn the necessary concepts and start building their own mapping applications from scratch. Developers can now build their own mapping systems to meet their own requirements, and there are no limits to what can be done. GIS has (Bolstad, 2016)transformed all the activities and disciplines that have previously used maps as a basis for decision making. Most areas of human activity have been

greatly influenced, usually positively, by the use of GIS technologies; in fact, it's hard to think of one that hasn't been "affected."

For the efficient use of the time and skills obtained, it is important that the realization of a map is well designed from the beginning. A hastily made map usually translates into a bad map. A successful and experienced cartographer knows that a well-designed map takes time and effort, trial, error and attention to the latest trends in colors, fonts and so on. At the same time, we must not let technology get in the way of design (Kennedy, 2013).

In the context of the above, we must bear in mind, however, that learning assisted by information technologies is often considered innovative in itself, and usually the success of technological integration has been based only on usability, without taking into account the qualitative aspect. Technological progress, which is becoming faster and faster with the possibilities offered by digitalization, also presents certain risks in the educational process: the actors of the educational processes operate independently, fragmenting it, and the role of pedagogy is decreasing, which also affects the quality of education (Linda, 2019). That's why smart pedagogy is meant to incorporate technology into education. On the other hand, technological progress implies the need for changes in the pedagogical competence of teachers, where one of the most important components of this competence is predictive analytical competence. Modern technologies are the basic element, but not the only one for an efficient use of geographic information systems.

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HIGH-SPEED RAIL INDUCED TRAFFIC FORECASTING BASED ON ELASTICITY OF DEMAND

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Abstract: The prediction of induced traffic volume is an important part of the feasibility study stage of railway construction projects, and its prediction results have a significant impact on the operation of the railway. Based on the analysis of the mechanism of induced traffic generation, the article uses the elasticity coefficient method to forecast railway induced traffic, and the study provides a theoretical basis for assessing the composition of high-speed railway passenger traffic and increases the accuracy of railway passenger traffic forecast results.

Keywords: High-speed railway, Passenger forecasting, Induced model

The mechanism of induced traffic generation

Induced traffic is a process that starts from nothing, i.e. with the completion of railway construction, the improvement of traffic conditions leads to the further development of the regional economy, thus inducing new traffic. The mechanism is based on the simple economic theory of supply and demand, where the improvement of railway network conditions leads to an increase in the supply of passengers and goods and a reduction in transport prices, which in turn leads to an increase in the demand for passenger and goods transport.

The supply curve is s and the demand curve is d. When supply and demand are in equilibrium, the two curves intersect at point A, where the price and volume of transport are P_0 and Q_0 respectively. As the demand curve is elastic, the supply curve is shifted to the right as s'. The new equilibrium point B is therefore created and the corresponding fares and volumes become P_1 and Q_1. The induced passenger demand is then (Q_1 - Q_0). For the supply curve, the elasticity of the curve reflects the degree of congestion, while a perfectly elastic supply curve, i.e. a horizontal straight line, represents a non-congested state. If the supply curve s' becomes perfectly elastic after the railway speed increase, the induced traffic volume (Q_1-Q_0) reaches its maximum. This means that the better the traffic conditions are, the greater the induced passenger traffic will be. If s' is fixed and the starting point of the s-curve remains the same while the elasticity becomes smaller, then point A will shift to the left, thus making (Q_1-Q_0) larger. This means that the higher the initial demand, the higher the induced passenger traffic.

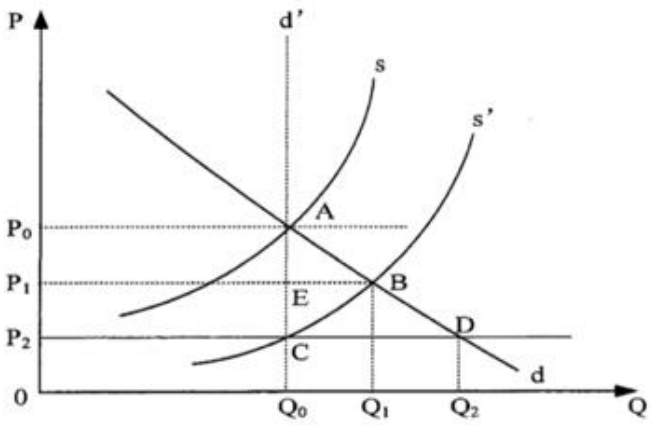

Figure 1. Relationship of transport supply

When the speed increases, the service characteristics of the means of transport will change, contributing to an increase in passenger traffic. The broad transport price is R' and the change in passenger volume is Q'.

Induced transport:

$$Q_{Induced} = Q^{'} - Q = \frac{R}{R^{'}}Q - Q = \frac{R-R^{'}}{R^{'}}Q \qquad (1)$$

Transfer traffic can be expressed as:

$$Q_{Transfer} = Q_{oij} * \left(f_{after} - f_{before}\right) \qquad (2)$$

Where $Q_{Transfer}$ - Transfer passenger volume of existing trains after speed increases;

Q_{oij} - Trended passenger traffic before the speed increase of existing trains;

f_{after} - Share rate of passenger traffic after speed increase on existing line;

f_{before} - Share rate of passenger traffic before speed increase on existing line.

Validation of the Beijing-Qinhuangdao Passenger Traffic Forecasting Model in a case study

The Beijing-Qinhuangdao line is 298 km long and underwent several modifications between 1996 and 2003 to adapt it to pass high-speed trains of 200 km/h or more. Based on the sharing rate formula, the sharing rate before and after the train speed increase can be calculated as 64.26%, 71.28% respectively, the share of passengers on existing lines increased by 71.28% - 64.26% = 7.02%. The diverted passenger flow is calculated as follows:

$$Q_{Transfer} = Q_{oij} * \left(f_{after} - f_{before}\right) = Q_{oij} * 7.02\% \qquad (3)$$

According to the study on the forecast of transfer passenger flow, the index value of each influencing factor affecting transfer passenger flow before and after the speed increase can be obtained as R=2.553, $R^{'}$=2.447. The induced passenger traffic is:

$Q_{Induced}$ = (2.553-2.447)/2.447*Q_{oij}=0.043*Q_{oij} (4)

Thus, the total number of passengers after the speed increase is:

$Q_{Total} = (1 + 7.02\% + 4.3\%)*Q_{oij}$=1.1132*$Q_{oij}$

A search result of historical data shows that the number of passengers transported between Beijing and Qinhuangdao in 2004 was 997,850,000.

It can be concluded that the total passenger traffic after the speed increase in 2004 is 11.1073 million, and the actual passenger traffic in 2004 is 11.2 million, with a relative error of 0.8%, indicating that the model can be used to predict the passenger traffic after the railway speeds up.

Conclusion

The railway speed-up generates induced passenger flows, i.e. due to the increased speed, the quality of service of the new system is improved, inducing a passenger demand that would not have been generated by the original average level of service in society. This article uses the Beijing-Qinhuangdao line as a case study to verify the feasibility of the induced passenger flow forecasting model.

PROACTIVE TEACHING OF CHEMICAL ENGINEERING IN MEXICO

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Abstract. The importance of Chemical Engineering in the technological development of a country is presented, being fundamental the teaching in the Universities with teachers who have the speciality and work experience in the subject they teach, as well as a pertinent training in pedagogy.

The chemical industry in Mexico is the second largest nationwide and the one with the largest economic contribution; represented 2% of the Gross Domestic Product (GDP) in 2019.

However, the enrollment of students in Chemical Engineering is not commensurate with the importance of what this industry demands.

It is important to strengthen the relationship of students and teachers of Chemical Engineering with industry and its processes, as well as its current technological situation.

Introduction

The chemical industry has been and is fundamental to the economic development of several countries, such as South Korea, which it helped to remove from the third world and position itself as one of the most important economies worldwide (National Museum of Korean Contemporary History, S. F.)

Having demonstrated its value as an agent of change the chemical industry, requires highly qualified human elements, since it is they who will keep this industry at the forefront.

It is necessary a comprehensive education that includes technical knowledge, skills in the use of information technology tools, training that promotes organizational development and communication, as well as a cultural factor aimed at stimulating proactivity, creativity and continuous improvement; it should be the basis for training Chemical Engineers who can not only have up-to-date knowledge regarding technological advances, but also personal skills. And this combination helps them in their training process to be professionals who can contribute to the development of the chemical industry with innovations in different areas.

Current Situation

In Mexico, the chemical industry is the second largest nationwide and the one with the largest economic contribution; represented 2% of the Gross Domestic Product (GDP) in 2019 according to data from the National Association of the Chemical Industry [1], (ANIQ, 2019). In 2020, the country's chemical industry obtained 218,733 million Mexican pesos (Statista Research Department, 2021). This indicates that it will continue to be a key industry for national development.

The oil boom gave rise to the expansion of the study of Chemical Engineering throughout the country, in this way it could be said that there is at least one School per State, highlighting the

following: National Autonomous University of Mexico UNAM, National Polytechnic Institute IPN, Autonomous Metropolitan University UAM, Autonomous University of Nuevo León UANL, Meritorious Autonomous University of Puebla BUAP, University of Guadalajara UDG, Autonomous University of Querétaro UAQ, Autonomous University of Estate of México UAEM. Being one of the most important public schools that offer the career of Chemical Engineering as well as the Private Universities that have been highlighted, we can mention the University of the Americas Puebla UAP, Ibero-American University, Technological Institute of Higher Studies of the West ITESO and Autonomous University of Guadalajara UAG.

[2] Garritz (2001), wrote that according to the National Association of Universities and Institutes of Higher Education ANUIES, at the end of the twentieth century only 2% of university students were dedicated to studying exact sciences and that for Chemical Engineering the statistics were tragic, since in 1998 only 2057 students were enrolled and 130 obtained their professional degree. The most current statistics that ANUIES reports are: Foresight to 2025.

Ramírez et al. (2016), published a very interesting prospective study, as part of the program that establishes the needs for improvement and modernization of engineering education in the member countries of the Organization of American States (OAS). After consulting experts from various countries, a list of 85 topics of interest to be addressed in chemical engineering academies in 2025 was obtained. These results emphasized the importance of topics related to engineering of process designs, unit operations and their antecedent of physicochemistry and thermodynamics, however, several priority topics are mentioned within quality criteria for engineering among which stand out, technical knowledge, deductive, analytical and critical thinking, teamwork capacity, assertive communication, decision making and of course speaking more than one language and management of virtual work and learning environments.

Analysis

In order to evolve in tandem with Mexican and globalized industries, the National Association of Universities and Institutions of Higher Education (ANUIES), recommends that by 2030 higher education should be renewed in terms of intensive incorporation of educational technologies and link with the world of work [3] (ANUIES, 2018).

It is common for curricula to be obsolete and without a focus on skills development, and teachers lack pedagogical knowledge, which hinders teacher-student communication.

Not all teachers teach the subjects according to their specialty and do not have industrial experience to know the challenges faced by the chemical industry in reality.

It is uncommon for teachers to conduct research because they have little time to do so and lack the necessary support and equipment.

This implies that the Professor of the XXI century has to raise awareness of the commitment acquired with his function, so he has to examine that now in the new educational paradigm and the Fourth Industrial Revolution they point out that university teachers must design learning experiences that must also be stimulating and challenging.

All this implies that there must also be design of study plans and programs according to the changing reality and that the professional profile of teachers in chemical engineering is consistent with the subject they teach.

Proposal

It is important to raise awareness among teachers of the commitment of their training function so that their teaching is motivating and with proactive attitudes. For this it is necessary that they have a training or pedagogical specialty of a minimum standard required, not only with the technical knowledge in their respective areas.

Curriculum design should be based on high-quality training processes so that students have knowledge and skills that solve complex problems and propose affordable creative solutions.

Curricula and programs of study should be designed in a multidisciplinary manner, involving experts in curriculum design, employers and teachers [4] (Escobar and Ramírez, 2020). Additionally, plans and programs alone are not the remedy for quality assurance, their relevance

must be measured periodically; monitor that the professional profiles and requirements to teach the classes are met and very important, ensure that the specified contents are fully covered.

In the same way, there must be agreement between the prestige and expectation of the Technological Institutions of Higher Education with the reality of the educational quality that is taught, in cases where there is discrepancy.

Conclusions

It is important that Higher Education teachers are up-to-date in the subject they teach.

Have close link of the Educational Institution with chemical engineering companies.

Periodically hold meetings of students of the last semester and Professors with Directors of the chemical industry.

It is important to master the English language and have proposals that achieve the development of competencies at the organizational level.

Integrate within the necessary requirements for Teachers, knowledge in pedagogy.

Acknowledgement

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Psychological sciences

IMPORTANCE OF MENTALIZING SKILLS FOR WORKING SUCCESS

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Introduction. Mentalization refers to the ability to perceive and interpret human behaviors in terms of intentional mental states such as emotions, desires, goals or desires (Fonagy, Gergely, Jurist & Target, 2002). Mentalization skills are acquired on evolutionary basis and emerge both from attachment relationships (Garon-Bissonnette et al., 2021) and from the quality of maternal reflexive functions (RF) (Fonagy & Target, 2001). Mentalization skills are the basis of empathy (i.e. the awareness and sharing of the mental states of others) and self-esteem, as well as problem solving, social cognition and resilience skills: the greater the mentalization skills and the greater the social skills acquired (Garon-Bissonnette et al., 2021). The reflective component favors a better and functional adaptation to the environment and to the various contexts with which the adult will relate. Overall, mentalization plays a fundamental role in the process of adapting to reality.

Among the various contexts with which the adult will relate, a fundamental one is represented by the working context and the relatedsuccess. From numerous researches we know that soft skills acquire fundamental importance for the purpose of job success (Attakorn et al., 2014; Gillard, 2009; Sejzi et al., 2013; Gruzdev et al., 2018; Majid et al., 2019). Soft skills refer to a set of positive personal attributes and skills that improve relationships, job performance and value for the market (Sejzi et al., 2013). Soft skills play a very important role in the workplace since they have an influence on the position held, as well as in the success of one's career. These skills are applicable to any field of work and are usually behavioral traits inherent in an individual (Sejzi et al., 2013; Gruzdev et al., 2018; Majid et al., 2019).

Several studies state that a combination of personal qualities and soft skills will certainly contribute to improving the employability of graduates (Wye & Lim, 2009), especially for the soft skills which are widely applicable (Attakorn et al., 2014). Infact, a specific set of skills maydetermine how we interact with others (Sejzi et al., 2013).

Considering the importance of mentalization and soft skills in adulthood, in this study we wanted to verify if any correlations exist between the mentalizing abilities and the soft skills possessed by a group of young graduates. Specifically, we started from the hypothesis that greater mentalization skills were predictors of good soft skills and therefore of good job success.

Materials and methods

Participants. The sample examined is made up of 60 young graduates in Economics, aged between 23 and 24 years. Specifically, the sample included young people (a) aged between 23 and 24 years, (b) who did not present nosographically defined psychopathological pictures (assessed through the administration of SCID 5) (First et al., 2017), (c) presented a normal cognitive profile (assessed through the administration of the Progressive Raven Matrices) (Raven & Rust, 2008).

Procedures. A sample of 60 children (40 M and 20 F) with an average age of 24.8 (SD 1.20) was collected at the Laboratory of New Learning Technologies of the University of International Studies of Rome after careful evaluation of the inclusion criteria. All the students were given the RFQ-8 questionnaire (Fonagy et al., 2016) for the assessment of mentalization skills one month after obtaining the master's degree in Economics. In addition, undergraduates were asked to report any job hires to us, to understand the employment times from graduation.

Results. Data analyzes were performed using SPSS 26.0 statistical survey software (2019). The significance was accepted at the 1% level ($\alpha < 0.01$). From the analyzes carried out, it was possible to correlate the RFQ-8 subscales with the time taken to find employment by recent graduates. We have named RFQ_C the Certainty subscale, RFQ_U the Uncertainty subscale and Time to Employment the employed occupation time.

In this study we performed a correlational analysis to investigate whether mentalization skills correlated with the time it took for recent graduates to find a job.

Our analyzes revealed an insignificant negative correlation between the uncertainty subscale and the occupation time [$r = - 0.179$; $p = 0.171$]. This data shows us that as the uncertainty of mental states increases, the time taken to find a job decreases.

We also found a significant positive correlation between the certainty subscale and the occupation time [$r = 0.942$; $p < 0.01$]. This data shows us that as the certainty of mental states increases (hypermentalization), the time taken to find work increases (table 1).

Table 1. Correlazione tra RFQ and time to employment

	RFQ_C			**RFQ_U**	
	r	p		r	p
Time to Employment	.942	< 0.01*	**Time to Employment**	-.179	.171

**Statistical significance p<0.01*

Conclusions. In this study we wanted to verify if any correlations exist between the mentalizing skills of a group of young graduates in Economics and the time it took to find a job.

Our analyzes have shown several mentalizing profiles. In the first place, the hypomentalizing profile, which describes subjects who appear unconvinced of knowing how to analyze the complexity of the mental states of others, take less time to find a job. However it was not significant but we know that there is a negative correlation.

Second, the hypermentalizing profile, which describes those subjects who appear excessively certain and excessively detailed about the mental states of themselves or others without appropriate evidence to support these representations. These subjects tend to need longer to find employment, due to their lack of empathy and social cognition (which have a negative impact on the efficacy of the job interviews) This positive correlation was significant.

In general, with this study, we can affirm that mentalization skills represent an important evolutionary stage for the development of a good adaptive functioning of the person within the various social contexts (Fonagy, Gergely, Jurist and Target, 2002; Garon-Bissonnette et al., 2021) but also represent fundamental skills for work and career success. By attributing mental states, the young person makes the behavior of others meaningful and predictable and will be able to implement, in a flexible way, anappropriate behavior, such as to be able to respond adaptively to the various interpersonal exchanges, especially in a functional way to internal work contexts.

However, other studies are needed in order to make these results generalizable, through an expansion of the sample and a follow-up over time in order to evaluate the maintenance of employment or any improvements within the working sector.

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CORONA'S IMPACT ON RURAL ECONOMY AND MARKETING

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(I am expressing the changes that I saw in the Indian rural economy / market during the critical period of the pandemic, based on thirty six years of academic and research experience. During this time, I did not have any other book or literature available for reference except my intellectual reflection. This research paper has been done on the basis of complete interview with consumers & formers. The study / analysis has been presented as a general citizen and student of commerce. This study is completely original and free of any kind of reference book, hence the research There is no mention of the study of any book at the end of the letter)

Abstract. The corona outbreak began in India in March 2020 and lockdown-1 became effective for rescue and security. All the remaining jobs, trade, industry, transport was closed except the mandatory requirements in lockdown. Then the possibility of adverse impact on the economy of the country was expressed. In this condition / period it was not possible to study the economy of the whole of India, then we chose our state Chhattisgarh and because I am a native here and this Chhattisgarh state was the only state in India which remained unaffected even during the recession. The economic condition of the farmers here was very strong, economic prosperity also remained in the public and employees, as a result, Chhattisgarh's market remained strong. How will the lockdown-1 of the Covid-19 affect it? Studies were done about this. The state established twenty years ago comes under the category of progressive states of the country if it is a tribal dominated state whose basic employment is agriculture. In agriculture also, paddy production has been excellent for three consecutive years. The social life here has been normal and peaceful. Due to the border of eight states, there is more scope of trade expansion here. Being the important state of Central India, the subject area of study was selected.

Keywords: Rural Economy, Impact of Covid-2019, Economy Crisis in 2019

Area of Study: Local markets of Chhattisgarh state (excluding grocery stores)
Limitation of the study: Essential consumer goods free from restrictions were studied.
Research Hypothesis:
H1 lockdown will increase inflation in the market.
H2 will weaken the economic condition of the weaker section of the state
H3 unemployment will increase
Research Method:
1. Overview of local market
2. Interview and Discussion with 300 vendors & 500 consumers of various area.
3. Telephone discussion / interaction with consumer / businessman of another district
4. Comparison Table Construction and Ratio Analysis

Explanation:

As soon as the arrival of Corona in India was informed, the residents of urban area as well as rural area started living with caution. Electronic media played the most role for this awareness. It has become the common belief of common villagers that this disease is of the big people and the same people are spreading it. This notion can also be said to a large extent because this epidemic was coming from abroad only. The villagers immediately banned the commuters in the village and started keeping a watch on those coming from outside. The result also came positive, when the disease spread in urban areas, then the city traffic was also stopped. The rural population remained

confined to the rural area to fulfill their needs, but kept the distance between them, and resolved not to attend any meeting or event at the time of the lockdown. People who used to go out in employment stopped going out. Started working in his farm and garden.

Took the Prime Minister's speech seriously and followed the instructions given by him. That is why no effect of Corona was seen in rural areas of India. The villagers continued to maintain the work of the farm, but paid special attention to cleanliness, everyone paid special attention to washing hands and children. Arrangements were made to sell outside the village by contacting over the phone for the sale of produced fruits and vegetables. With which he got financial support and started mixing the materials of the people of urban areas. The villagers had some concern of the members of their family who had gone to the twelve of the state or districts for employment. Their concern was reduced by means of communication such as the availability of phones and mobiles. However, due to the dam of industry and trade, the income receipts / paddy shortage started causing problems and people started walking to their original place on foot. A fearful environment was born. Finally, with the intervention of the government, resources were made available, then the situation could come under control. During this time, about eight Lakes Immigrant laborers returned to Chhattisgarh and about three lakes laborers returned to their other home states.

Research Study Analysis:

Shop of Medical, Administration, Security, Telecommunication, Media, and Essential Goods Transportation etc. as a necessary service during the Covid-19 Lockdwon-1 was exempted. Similarly, permission was given to open fruits, milk, vegetables, medicine shops, bread, and petrol pumps as an essential item. This was studied.

Market Status:

S. No	Particulers	Fruit	Milk	Vegetable	Bread	Medicin	Transport	Total
1.	Number of selected vendors	50	50	50	50	50	50	300
2.	Number of selected users	100	100	160	70	50	20	500
3.	Market price ratio	20%	85%	20%	10%	Fix 100%	Increase	Price Drop
4.	Consumer satisfaction	Satisfied-100	Satisfied 100	Satisfied 160	Satisfied 70	Satisfied - 40	Unsatisfied -20	Satisfied - 470 Unsatisfied-30
5.	Option selection problem	Limited-20	Enough 100	Limited48	Enough 70	Satisfied 40	Lack 20	Satisfied-412 Unsatisfied-88
6.	Satisfied in Lockdown	Satisfied	Satisfied	Satisfied	Satisfied	Unsatisfied	Unsatisfied	Satisfied
7.	Everyone Expects Groceries *during Lockdown*	50	83	110	70	27	55	395/800
8.	Other service demand in *Lockdown*	92	68	65	20	25	55	325/800

Reasons for Price drop

S. No	**Particulers**	Fruit	Milk	Vegetable	Bread	Medicin	Transport	Total
1.	**Consumer:** Increased supply	15%	30%	--	--	--	--	22.5%
	Reduction in demand	8%	20%	18%	--	--	--	15.3%
	Quality degradation	--	--	10%	5%	--	--	7.5%
	Lack of options	77%	50%	72%	95%			72.5%
2.	Merchant: Increase in supply	--	20%	--	7%	--	--	13.5%
	Reduction in demand	15%	25%	7%	8%	--	--	14%
	Quality degradation	--	--	--	--	--	--	--
	Quick income	45%	42%	23%	31%	--	--	35%
	Risk or short-term demand	20%	13%	30%	29%	--	--	22.5%
	Intermediary	20%	--	40%	25%	--	--	38%

It is clear from the details given in the above table that during the lock-down, there was no special impact on the economy of the villagers of the state, although some economic activities have been postponed due to the social activities that were affected by the lock-down, but there has been no economic loss. If it is done point wise, then it is known that the price of fruits and vegetables decreased, due to which the middlemen were not found, while the demand for fruits was increased and the demand for vegetables was stable. Although there was no restriction on the transportation of essential commodities (fruits, milk, vegetables, medicine, fuel, medicine etc.), sufficient quantities of milk, fruits and vegetables were supplied by local farmers. Due to the dam of hotels, hostels, tea etc., there was some decrease in the demand of milk, as a result, such milk vendors kept selling milk for a few days at a lower price and then selling curd cheese from house to house. Due to which the demand for milk in the dairy center was less. The common consumer had to depend on local milk such as Bhoramdev, Vakaan instead of Amul, Dinsa milk. Due to the availability of local production of vegetables and fruits, the price decreased but there was a lack of options due to mixing the same type of fruit and vegetable every day. It is clear from the overall study that the price of Fruits, Vegetables, Milk, and Bread was found to fall mainly due to the absence of middlemen, yet the consumers were not satisfied as the choice / selection or consumption of the desired material was lacking.

Most of the traders were also in favor of exempting other ancillary / supplementary business during the lock down, then consumers were also in favor of opening some more shops by temptation but they also did not want all the shops to be open to prevent sickness.

The Price Increase Due To:

The only way to avoid corona disease for sudden birth was to see black marketing of these materials due to excessive demand of sanitizer, mask and limited materials in the drugstore, but that too quickly got controlled by the administration's intervention. By the way, there was a sudden decrease in the demand for Rosemary's medicine. Due to reduction / control of minor diseases like cold-cough, fever, digestion, pain etc., demand decreased. The owner of the drugstore said that the prohibition on selling over-the-counter medicines and the halt of operation or intensive medical treatment in hospitals had adverse effects on the sale of the drug. The drug has always been sold on the basis of the published price, due to which the price increase or black-marketing situation was not created. Everything is under control till writing the research paper.

Only increase in the price of transport was found, mainly because of the risk of healthy safety during the journey, as well as the problem of administrative approval. There was also no possibility of adding other necessary facilities during the journey. The trip felt quite risky.

The villagers were allowed to work with sufficient distance in the field during the lockdown, due to which there was no unemployment situation in the rural area, but those who were (migrant laborers) must face unemployment, such people selling goods in the market and other He was seen working in collaboration. Such people, who did not have their own farm or farm labor work, were definitely facing unemployment, but the food grains available to them at a cheaper rate was a sufficient basis for their livelihood. Since everything was closed, there was no possibility of employment, yet there was a possibility of part-time employment in rural areas provided the laborer was willing to work. Due to the continuation of home access service of food items, some villagers stayed connected with this type of service center and got employment.

After discussing the economic situation with some consumers and traders, they said that yes, it is fine, but there may be trouble if the lock down is going on for a long time. There is a cut in. Thus, it is important that people are aware of their own useless expenditure.

During the study, it was revealed that the villagers had the opportunity to sell their produce directly to the consumer in the market, due to which they were selling the goods at a normal price with a very enthusiastic and dedicated price that was sold to the middleman. There was more than the intermediary used to stop payment which now they were receiving cash. Thus, a healthy market was a producer and a consumer. Therefore, the situation of price rise was not seen in the market. The consumer also came to know that the middle broker is the root cause of the increase.

Result of Research Hypothesis:

H1 lockdown will increase inflation in the market.

H2 will weaken the economic condition of the weaker farming class of the state.

H3 unemployment will increase.

Conclusion:

During lock down-1, there was a formal relationship between the consumer and the traders, both were able to maintain the business relationship keeping in mind each other's interests, needs and circumstances. Merchants were providing immediate supply as per demand and houses were also providing accessibility facility, no bargaining was found regarding the value of the material. Consumers were purchasing keeping in mind the availability of materials as well as quality-hygiene. There was no crowd or crowd like ordinary days in the market. Some small and retail traders were selling goods like door-to-door in the locality. The drug dealers were also providing home access facility as per the list received on the phone. Petrol and transportation facilities were available at the designated place. The consumer was more effective in the market.

THE CHARACTERISTICS OF AZERBAIJAN'S AGRICULTURAL PRODUCTS MARKET FORMATION

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Abstract. The agricultural market is a system that involves all elements of the market structure, including decision-making process regarding production [9, pg. 1]. The first element of the value chain is production. The structure of production in the country is one of the main factors shaping the market of agricultural products. In these regards, when studying the characteristics of the agricultural market in Azerbaijan, the structure of production was first analyzed, and the sectors that bring more value to the overall actual production structure were assessed.

RESULTS AND DISCUSSION

According to the mean indicators of 2018-2020, about 6 % of the country's economy fell to the share of the agricultural sector [2, pg. 1]. In this period, the share of the Gross Domestic Product (GDP) of the agricultural sector in the non-oil sector was around 11 % [3 and 4, pg. 1]. During this period, the share of agricultural exports in non-oil exports was 46 % [5, pg. 1].

One of the main factors determining the characteristics of the formation of the market of agricultural products is the structure of production. More than 90% of agricultural production in Azerbaijan falls under the share of family farms. This was 89.1 % in the crop sector and 91.0 % in the livestock sector *(Figure 1).*

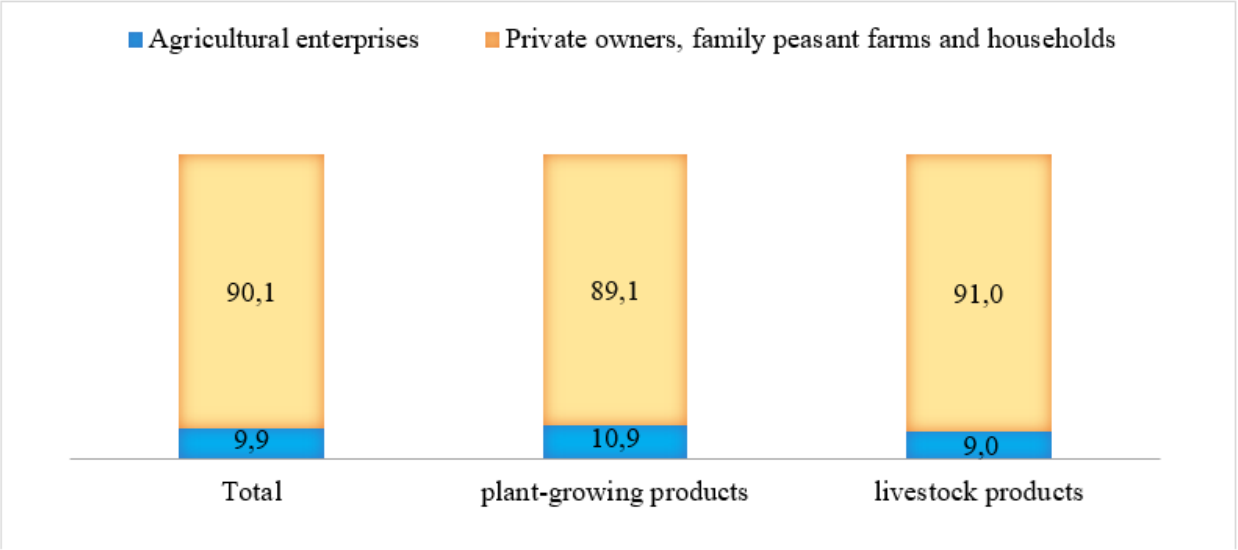

Figure 1. Structure of agricultural production by farm categories in 2020, in %

Source: *Azerbaijan State Statistical Committee (Structure of agricultural products) [1, pg. 1].*

In the structure of production by types of products, the total production of crop products was 47.8 percent, livestock production - 52.2 percent *(Figure 2).*

According to Figure 2, 32.1 % of the total production fell to meat production, 15.8 % to vegetable production, 15.3 % to milk production, 11 % to grain production, 8.3 % to fruit and berry products, 6.2 % to potato production and 2.7 % to industrial crops (cotton, sunflower, tobacco, sugar beet).

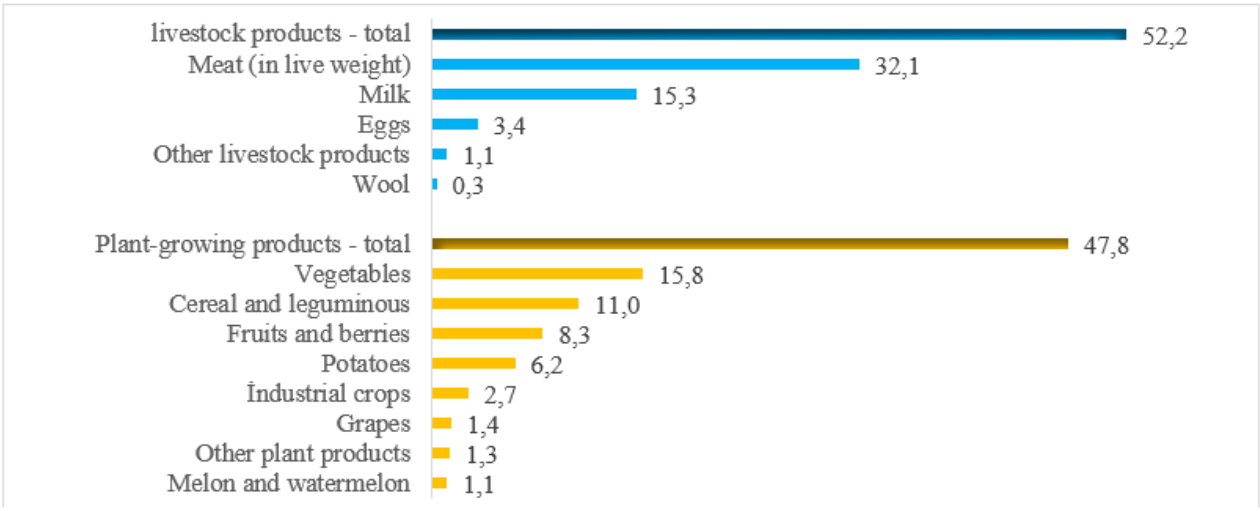

Figure 2. The structure of agricultural production by products in 2020, in %

Source: *Azerbaijan State Statistical Committee (Structure of agricultural products) [1, pg. 2].*

A comparison of the production per hectare of arable land in the crop sector is given in Table 1. It is clearly seen from the data in the table that the largest production area for crop products is vegetables. Thus, vegetable production constituted 15.8% of total agricultural production and 33.1% of vegetable production. 27.4% of the vegetable production in the country is grown in greenhouses and this constitutes 5.6% of the total vegetable crop. In this regard, according to the capacity of production per hectare, vegetables are the most profitable area. After vegetables, the most produced product per hectare is potato. The production volume per hectare amounted to about 9.2 thousand manat. Grape, melon, fruit and strawberry production per hectare is 7.9 thousand manat, 4.6 thousand manat and 4.4 thousand manat, respectively, and it is the most profitable sector after vegetable and potato production.

Table 1. Production volume per a hectare in 2020

	The share of crop production in total agricultural production	**Share in the plant-growing production**	**Plant-growing production, million manats**	**Sown area, thsd. ha**	**Share in sown area**	**Production volume per a hectare, manats**
Plant-growing products - total	**47.8%**	**100.0%**	**4028.4**	**1,794.1**	**100.0%**	**2245.4**
Cereals and leguminous	11.0%	23.0%	927.2	989.1	55.1%	937.4
Industrial crops	2.7%	5.6%	227.6	122.0	6.8%	1864.7
Potato	6.2%	13.0%	522.6	57.0	3.2%	9170.2
Vegetables	15.8%	33.1%	1331.8	66.6	3.7%	19996.2
Melon and watermelon	1.1%	2.3%	92.7	20.0	1.1%	4637.8
Fruits and berries (at fruits bearing ages)	8.3%	17.4%	699.6	159.9	8.9%	4375.1
Grapes (at fruits bearing ages)	1.4%	2.9%	118.0	14.9	0.8%	7914.0
Other plant products (fodder etc.)	1.3%	2.7%	109.6	364.5	20.3%	300.6

Source*: Calculated by the author based on the data of the State Statistics Committee [1,6,7]*

The least profitable area per hectare is grain and fodder products. Thus, approximately 937 manat of grain and 300 manat of fodder are produced per hectare. These two sectors are of great importance for the country's food supply.

CONCLUSION

Therefore, while examining the formation characteristics of the agricultural market in the country, the structure of agricultural production as a key factor affecting the formation of the market is analyzed and the main findings are grouped as follows:

- A large part of the agricultural production in the country is produced by family farms with small arable lands;
- The structure of production is formed by meat (32%), vegetables (16%), milk (15%), grain (11%), fruits and berries (8.3%), potatoes (6.2%) and industrial crops (2.7%).
- Grain and fodder production, which constitutes approximately 75% of the arable land, accounts for 12.3% of the total production and 25.7% of the crop production;
- Yield per hectare has been formed from much to less, such as vegetables, potatoes, grapes, melons, fruits and berries, industrial crops, grains and fodder.

Changes in the production structure in the agricultural sector, both on the basis of economic categories and products, have a direct impact on the formation of the market.

Currently, state support measures in the country aim to develop high value-added sectors as well as ensuring food security. In this regard, the share of fruit and vegetable production in Azerbaijan's agricultural production is expected to increase in the medium period.

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UNEMPLOYMENT AND SOFT SKILLS IN THE REPUBLIC OF SOUTH AFRICA

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South Africa is a free, democratic country in Sub-Saharan Africa, where civil liberties and political rights are largely respected [1].

It is also traditionally one of the strongest economies on the African continent, currently being in the top 3, in the company of Egypt and Nigeria [2].

However, high unemployment has been a regular problem, as can be observed in this table:

Table 1: Unemployment in South Africa, in per cent. 1998-2020. Numbers have been rounded. Source: World Bank

1998	2008	2019	2020
25%	22%	28%	29%

Official data of the South African national statistical service points out that in 2021 the unemployment rate had risen to more than 32%, among the youth (aged 15-24) this percentage was more than 46% [4].

The question arises as to why that is the case. To be sure, there is no easy answer to that – apartheid, government mismanagement, COVID-19 can all be pointed out as having contributed to that.

Acquiring specific skills could be a solution for finding professional realization easier. In this context, educational institutions have a vital role to play. In that respect, South African authorities have made considerable progress since 1994, making education accessible to ever more people, however, there are still many challenges ahead [5].

When talking about skills, it is necessary to distinguish between the so-called "soft skills" and "hard skills".

Hard skills by one possible definition "are competencies that employees possess such as numeracy, literacy, fluency in a foreign language, and specific job-related technical abilities (operating a machine, creating a spreadsheet, touch-typing, driving, dressing a wound, and so forth). Typically these skills are relatively easy to measure, and are often validated with some form of qualification" [6].

Soft skills by one possible definition are "people's abilities to communicate with each other and work well together" [7].

In concrete terms, this means that hard skills are for example knowledge of languages, economics, architectural design and so on. Soft skills are for example the ability to work successfully in a team, public speaking, intercultural communication, and the like.

It is vital to understand that soft skills and hard skills go hand in hand, thus they are both beneficial for one's future career success. But where can one learn soft skills? In principle, soft skills can be taught at schools and universities in the form of courses, but they can also be acquired by following online courses on one of the major online learning platforms (edX is one example) available worldwide, or by practice and training.

A report by the United States Agency for International Development postulates, that soft skills can help youth in Sub-Saharan Africa increase income and employment levels [8], which further shows the growing importance of such specific skills.

According to the largest South African business news website (that is Business Tech): “in South Africa, 80% of job offers require one or more soft skills” [9]. So, what are the most needed soft skills on the South African job market?

In the same article, it is also outlined that “problem-solving, adaptability and time-management is what SA recruiters are after” [9].

Furthermore, Estelle Taylor conducted a study of soft skills perception of students, lecturers, and industry at a South African university. In it, the top 3 biggest shortcomings of such skills were identified as being in written and verbal communication, multi-disciplinary thinking, and self-management [10].

As can be deduced and subsequently summarized, specific soft skills are sought after in South Africa and can thus help South Africans gain advantage on the job market and get the desired employment, which in turn can help ease the unemployment crisis in the country.

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THREE MAIN CHARACTERISTICS OF SOFT SKILLS

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There is no single definition by which it is possible to summarize and define the meaning of the term "soft skills".

1.“Soft skills” may be referred to by many other names, the most common of which are: essential skills, noncognitive skills, personal skills interpersonal skills, personality traits , character traits, character skills, social skills, behavioral skills, emotional skills, socioemotional skills, “people skills”, human skills, uniquely human skills, common skills, core skills, non-technical skills, foundation skills, transferable skills, employability skills, 21st century skills ,key competences and more…(https://doe.sd.gov/,https://www.sciencedirect.com/science/article/abs/pii/S0927537112000577, https://en.wikipedia.org/wiki/Soft_skills, https://www.nationalskillscommission.gov.au/23-core-competencies-importance-set-base-transferable-skills, https://www.thebalancecareers.com/list-of-soft-skills-2063770, https://novoresume.com/career-blog/soft-skills, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32006H0962, https://www.investopedia.com/terms/s/soft-skills.asp, https://www.indeed.com/career advice/resumes-cover-letters/soft-skills, https://www.cengagegroup.com/news/press-releases/2019/new-survey-demand-for-uniquely-human-skills-increases-even-as-technology-and-automation-replace-some-jobs/) Each of these different names may have a somewhat unclear meaning and refer to a variety of different abilities, qualities, and attributes.

In addition, when someone is talking about “soft skills”, he or she may be associating them with an idea of some peculiar combination of several of these attributes or have in mind something completely different.

Every time we use the term "soft skills" we must be able to explain not only in what sense we are using it but also why we have chosen to use this name instead of all the others.

In the famous article named ‘Hard Evidence for Soft Skills’ (https://www.sciencedirect.com/science/article/abs/pii/S0927537112000577) the authors address the problem as follows: “These different names connote different properties. […] The terms “skills” and “character” suggest that they can be learned.”

A very interesting remark that makes obvious the fact that the term ‘skills’ needs to refer not to something new or specific, but to something that can be studied, learned, educated and developed in formal education.

It is worth noting that despite the name of the article the authors explicitly prefer the term “personality traits”.

2. We looked at the everyday use of the term ‘soft skills’ in order to bring out the first feature of soft skills, which is the fact that they can be developed, taught and learned. In order to derive the second such feature, it would be good to look at the original purpose of the term and its genealogy.

Surprisingly detailed, scientific and accurate information can be found in Wikipedia, where it is stated that the term soft skills “was created by the US Army. in the late 1960's and referred to ‘any skill that does not employ the use of machinery.’” (https://en.wikipedia.org/wiki/Soft_skills)

Thus, the term ‘soft skills’ was introduced in opposition to the term ‘hard skills’, which initially represented the skills associated with the use of machines.

“Hard skills” are also those skills that are taught in formal education. (See the section named “ Hard Skills vs. Soft Skills” https://www.investopedia.com/terms/s/soft-skills.asp)

The formal education system in Europe is focused on learning ways and means to interact with technology (For example see In the RECOMMENDATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 on key competences for lifelong learning Official Journal of the European Union in the https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32006H0962 https://www.schooleducationgateway.eu/bg/pub/resources/publications/council-recommendation-on-key-.htm https://www.investopedia.com/terms/s/soft-skills.asp), but it must also pay attention to things that technology will not be able to do soon. (https://hbr.org/2019/09/are-you-developing-skills-that-wont-be-automated?utm_source=facebook&utm_campaign=hbr&utm_medium=social&fbclid=IwAR0EExqFftrGRZ_jQIYZsgKcjvBNXEOdm674rxa-kJAyXPe26QGRNdGGIlU&registration=success https://www.mckinsey.com/~/media/McKinsey/Industries/Public%20and%20Social%20Sector/Our%20Insights/What%20the%20future%20of%20work%20will%20mean%20for%20jobs%20skills%20and%20wages/MGI-Jobs-Lost-Jobs-Gained-Executive-sum) Every student should ask themselves: "Are you developing skills that won't be automated?" In an article with this title the former Dean of Social Science at Harvard University Stephen Kosslyn reveals the importance of the contradictory nature of "soft skills" for the future development of mankind as follows:

"This is a new approach to characterizing the underlying nature of "soft skills," which are probably misnamed: These are the skills that are hardest to understand and systematize, and the skills that give — and will continue to give —humans an edge over robots."(https://hbr.org/2019/09/are-you-developing-skills-that-wont-be-automated?utm_source=facebook&utm_campaign=hbr&utm_medium=social&fbclid=IwAR0EExqFftrGRZ_jQIYZsgKcjvBNXEOdm674rxa-kJAyXPe26QGRNdGGIlU&registration=success)

Some of the "hard skills" taught in formal school and university education can be 'automated' and therefore technology and robots could perform them in the future.

Thus, we have derived a negative definition, in which "soft skills" are opposed to "hard skills", which are most often taught in formal education, even though "soft skills" are those that future employees will need more and more

3. Now we need to take a closer look at the scope of the concept of "soft skills". When we are talking about "soft skills" we can mean for example: critical thinking, problem solving, public speaking, professional writing, teamwork, digital literacy, leadership, a receptive attitude, a professional attitude, work ethics, career management, intercultural fluency (https://news.illinoisstate.edu/2019/03/intercultural-fluency-a-critical-soft-skill-in-todays-global-world/), dependability, reliability, motivation, initiative, communication, commitment, creativity, flexibility, stress management, time management, (https://grad.uc.edu/student-life/news/soft-skills.html) effective communication skills, self-direction, drive, (https://www.indeed.com/career-advice/resumes-cover-letters/soft-skills) nonverbal communication, integrity, curiosity, trustwothiness, empathy, humor, networking, tolerance, diplomacy, depersonalization (https://novoresume.com/career-blog/soft-skills), charisma, empathy, organization and many more.

The list of possible attributes can be continued indefinitely but the common denominator we can derive is that they are all closely related to the practice of a particular profession (As it is stated in https://www.thebalancecareers.com/list-of-soft-skills-2063770 "Soft skills are the skills that enable you to fit in at a workplace. They include your personality, attitude, flexibility, motivation, and manners. "Soft skills are the skills that enable you to fit in at a workplace. They include your personality, attitude, flexibility, motivation, and manners.")

Conclusion:

We have identified three main characteristics of "soft skills".

1. They can be developed, studied and taught.

2. They cannot be automated.

3. They are utilitarian, bring practical benefits and are directly related to professional life in all its spheres and manifestations.

The priorities and standards of education need to be changed so that 'soft skills' can be effectively taught and developed, which, in turn, would allow future jobseekers to meet future labor market requirements.

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IMPROVEMENT OF MECHANISMS FOR SHEEP DEVELOPMENT IN AZERBAIJAN

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Abstract. Sheep breeding is one of the most important areas of livestock in Azerbaijan. Sheep products, especially cheese is very famous and most popular among the local population and foreigners traveling to the country.

The paper focuses on analyzing the role of the sheep sector in animal husbandry and finding out future opportunities for fully meeting the needs of the Azerbaijani population.

The paper also offers information on the role of sheep breeding in the sustainable development of agriculture in Azerbaijan, provides analysis and comparison of statistic data (number, production), the current state and existing problems of the industry, economic efficiency of the sheep breeding, as well as the role of using new technologies in terms of forming and developing competencies to improve export opportunities for live animals and their products.

Keywords: sheep, sheep breeding, the role of sheep breeding in the sustainable development of agriculture, improving export opportunities, the role of breeding in the development of sheep industry.

Introduction. According to the FAOSTAT database of the United Nations Food and Agriculture Organization (FAO, 2019), there are 1.2 billion sheep in the world, mostly in China (165.9 million), Australia (67.5 million), India (63.1 million), Nigeria (44.2 million), Iran (39.2 million), United Kingdom (34.5 million), Chad (34.5 million), Ethiopia (33.2 million), Turkey (31.9 million), and Mongolia (31.7 million) [9].

Sheep are adapted to different climatic conditions and temperature ranges. Due to these advantages, they can concentrate and live anywhere in the world. These animals are used for meat, milk, wool, skin, and other products by people in all of the countries: low-income poor, as well as high-income developed countries. Depending on the breed and rearing technology, sheep can multiply easily and quickly increase the family budget.

They are not very demanding in the quality of food and can assimilate around 400 different plant species, unlike other animals. However, it is important to provide them with high-quality feeds to reach high productivity and production volume (lambs, milk, meat, and wool).

Although people generally prefer cow's milk, sheep's milk has recently become widely recognized and used as a popular food product because of its many benefits for humans. Sheep milk contains high amounts of nucleotides, Vitamins A and E, and protein, boosting the immune system, growth, and development, and reducing the chance of being affected by cancer [9]. China, Turkey, Greece, Syria, Romania, Spain, Sudan, Somalia, Iran, Italy are the top ten sheep milk producers in the world and dairy small ruminants produce around 3.5% of the world's milk [6].

Another benefit of the industry is being less harmful to the environment. For example, in New Zealand dairy sheep is a growing industry and the number of producers increased by 50% from 2019 to 2021. According to the scientists and farmers of this country, the sheep dairy industry is a solution of the future to reduce nitrogen (N) leaching and greenhouse gas (GHG) emissions [8].

Sheep industry in Azerbaijan

Sheep breeding is considered to be one of the most important areas of animal husbandry in Azerbaijan, 27.63% of total livestock [9].

Farmers have become more interested in establishing large sheep farms and intensive sheep breeding over the past 5-6 years. This process is stimulated by importing high-productive sheep and goats from other countries and selling them to farmers at a 60% discount by the government.

The cost-effective shed construction, low-cost of live animals compared to other species, high productivity of ewes, available cheap grasses, less manpower demand make this field more profitable for farmers.

There are 8.1 million small ruminants in Azerbaijan, including 7.5 million sheep and 605.9 thousand goats **(Table 1).**

Table 1. The number of small ruminants in Azerbaijan, thousand heads

Year	Sheep and goats	Including	
		Sheep	Goats
2016	8677.1	8025.6	651.5
2017	8614.8	7966.5	648.3
2018	8454.3	7821.0	633.3
2019	8304.1	7681.7	622.4
2020	8189.2	7575.4	613.8
2021	8089.7	7483.8	605.9

Source: [1]

According to the table, the number of small ruminants has been annually declining by an average of 1.39% since 2016 (Table 2). The main reasons for this decline are the reduction of fodder and pasture areas, the use of agricultural lands for industrial purposes, water shortages, and other climate change issues, pastureland degradation due to overuse, lack of veterinary services, lack of adequate extension and research support system limiting the benefits of new improvements and technologies in reaching farmers [7].

In Azerbaijan, which had a favorable climate and affordable pastures conditions for sheep breeding, the sector has always developed in an extensively nomadic environment due to its cost-effectiveness, but to adapt to the mentioned above challenges, reduce negative impacts to the environment, make the field more profitable and export-oriented, and increase the efficiency of lands, pastures, and water usages, it is needed to examine the implementation of new technologies.

According to Susan Schoenia, a sheep and goat specialist at the University of Maryland, there are more than 10,000 breeds of sheep in the world [4].

Azerbaijan also has several sheep breeds adapted to the existing climatic conditions of the country: Balbas, Mazekh, Bozakh, Shirvan, Azerbaijani mountain merino, Karabakh, Garadolag, Godek, Lezgi, Jaro, Herik, and Gala. Unfortunately, some of them have not been preserved up to date or lost their genetic merits.

According to the results of the census, conducted by the State Statistics Committee of Azerbaijan in 2015, there were only 7768413 sheep in the country, of which Bozakh - 16.8%, Karabakh -12.8%, Shirvan - 11.0%, Lezgi -7.5%, Balbas - 6.9 %, Garadolag - 2.0% and the remaining 41.7% - other breeds [2].

Balbas, Bozakh, Garabagh, and Garadolag breeds are preferred by the local farmers due to their meat, milk, and wool purpose, as well as better genetic and adaptation performances.

The problems of the sheep industry

Sheep operations belong mainly to small and medium farms and they face many challenges in their business. These difficulties include the lack of scientific and theoretical knowledge on sheep breeding, the decline of young people's interest in this field, the gradual loss of family traditions in sheep breeding, natural or very weak breeding practices.

The development of sheep breeding in Azerbaijan will depend on 5 main factors in the near future: 1. Fodder supply; 2. Breeding and selection; 3. New technologies; 4. Herd management. 5. Training of professional staff.

Fodder supply. Ensuring availability of sufficient and high-quality fodder, preventing lands from use for other purposes, restoration and improvement of pasture vegetation, rational use of summer and winter pastures can help overcome existing challenges.

Breeding and selection. In order to make significant progress on the breeding program, it is necessary to change the practiced approach to the breeding strategy. Recently, certain steps have been taken in this area to improve the situation. The government has imported various high-quality sheep breeds and sold them to the local farmers with a 60% discount to improve the genetic qualities of local animals.

Due to a nearly nonexistent extension system, small farmers are not aware of scientific management practices [8]. To this end, the application of scientific management practices in the breeding, maintenance, and reproduction, application of artificial insemination in the pedigree farms, development of individual farm selection programs, and providing results-oriented research in the breeding farms are highly recommended.

New technologies. The adoption of available and cost-acceptable technologies in sheep operations could increase the productivity of animals and volume of production, improve the quality of products by saving labor work. It is obvious, that application of new technologies increases the cost of the products due to the high value of the investments. In addition, income returns take approximately 7-10 years or even longer depending on the amount of the investments. This situation turns aside small and medium farmers to invest in the new technologies.

The introduction of the new technologies in the large farms may increase the interest of young people in this field and train a new generation of specialists in sheep breeding.

Herd management. A different management approach should be applied to each herd, depending on the purpose of production (meat, milk, wool, organic, etc.) and the goals set.

In this case, the location of facilities, disease-free storage, and feeding conditions, access to pastures and drinking water, preparation of selection programs for each herd, providing the herd with high-productive rams in accordance with the production goal, following biosafety and veterinary requirements (vaccination, helminths prevention, etc.), training of farm owners, registration of productivity and reproduction performances, applying web-based software programs become more appropriate objects.

Training of professional staff. Offering farm-based jobs to the students during their study, improving the accommodation and payment conditions for young professionals after graduation, as well as adopting new technologies will make the industry more attractive.

Conclusion

Despite the existing problems in sheep breeding, the role of this sector in the development of small and medium-sized households, providing the family budget with a sustainable source of income, and providing the country's population with sheep meat is undeniable.

It seems likely that new available technologies requiring large capital investment will not be widely implemented in the near future, but the return of investment over time and having a profit in a short time due to new technologies could lead to new opportunities for sustainable and export-oriented industry

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COMPETENCES IN THE WORK OF A TEACHER – THE COMPETENCES OF THE PERSONAL SUCCESS

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Teacher is a person who, due to the nature of his work with people, has to be characterised by certain competences, directly indicating the limits of his professional effectiveness.

In the Polish literature from the field of pedagogy the term "teacher competences" is used and understood as a specific cognitive structure comprising the following: knowledge, skills, dispositions and attitude of a teacher. The attitude is indispensable for the effective performance of tasks, but it also determines the quality of his social relations with others (Szempruch, J., 2001, p. 112). It means that a competent teacher is a professional in his profession as well as a human being deriving satisfaction from personal contacts with people.

From the pedagogical perspective, competencies may be interpreted either in the light of adaptive or transgressive potential of a human. As for the first meaning, the competences assume an instrumental character, which consists in the ability to act effectively towards a goal. In the case of teachers, it takes the form of them being competent specialists achieving the planned effects pertaining to the didactic and educational interactions. Apart from that, they are able to take a high position in the social and professional structure. Due to an economical approach towards the competencies, as implied by this dimension, it is so frequently subject to criticisim. Teachers should not be driven by pecuniary motives, after all (Kulshrestha, A. K., Pandey, K., p. 33.) The transgressive potential stands up in opposition thereto, as it connected with cognitive structure and integration of teacher's relations with the world. In this sense the teacher is creative while taking actions. He becomes familiar with the world, transforms it in accordance with his vision and does not reproduce, reconstruct knowledge (Męczkowska, A., 2003, pp. 693-696). From the perspective of the effectiveness of both didactic and educational interactions it is definitely the positive approach that is created, where the teacher teaches his pupils to look at the reality in the category of a positive transformation. Furthermore, it can be assumed with a high likelihood that the teacher implements his creations in his personal life, which is interesting in the eyes of others and encouraging to make a contact with him.

Olga Nessipbayeva notices that pedagogical culture represents an inherent part of a competent teacher (2012, p. 150). It encompasses the three components: the axiological, the technological and the heuristic one. This is the last component that discloses the creative particle of teacher's work, which manifests itself in the ability to set goals, plan, analyze and be critical of oneself. While developing the heuristic component during the course of work, the teacher simultaneously transfers his newly developed skills into other areas of his life, thus contributing to the multi-faceted success in his personal dimension. Furthermore, Buharkova and Gorshkova (as cited by Nessipbayeva, p. 150) uphold that teachers go through four stages in their professional career, with the first level consisting in pedagogical abilities (i.e. the obtained knowledge), the second level in pedagogical skills (i.e. the mastered teaching skills), the third one in pedagogical creativity (i.e. the adaptation of new educational methods and techniques), and the last one in pedagogical innovation, i.e. the implementation of progressive educational methods, ideas, theoretical principles, etc. Accordingly, a competent teacher is an innovative person who is able to introduce transformations into an educational process, hence making the educational world better. The innovative actions undertaken by teachers affect pupils, parents, the immediate milieu, the

broader milieu of the country, or even the global milieu. In this way teacher's professional competencies are somehow synonymous with teacher's personal success.

Maria Czerepaniak-Walczak (1997, p. 90) enumerates the four types of professional competencies of teachers: preliminary, informed, transformative, fundamental. Each competency performs a different function. The preliminary competencies, as the name entails, constitute a prerequisite for an adequate fulfillment of professional tasks. The informed competencies play a significant role in the completion of current tasks. They strengthen self-confidence and teacher's sense of professionalism. Then, these are innovativeness, coping with stress ability and constructive conflict resolution that are characteristic of a teacher displaying transformative competency. In the work of a teacher readiness and openness to changes are indispensable, which is meant by the fundamental competencies. The critical assessment of both the current situation and the introduced novelties are of paramount importance, too.

Overall, the competent teacher shall be considered as a professional who simultaneously fulfills himself in his personal life in the relations with other persons. He is believed to be responsible, creative, reacting skilfully in difficult situations, critical and open to changes. Above all, the teacher is an innovator whose competencies in professional sphere translate themselves into his personal success.

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INTUITION AND IT RELATION WITH CREATIVE MOTIVATION, EMOTIONAL INTELLIGENCE, AND ACHIEVEMENT MOTIVATION AMONG ADOLESCENTS

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Abstract. An attempt has been made to find out the differences between genders across the variables which are: Intuition, creative motivation, emotional intelligence, and achievement motivation among secondary school students in State of Kuwait, in addition to investigate the directions of relationships between intuition and the previous variables under study, and finally to determine the best predictors of intuition. This study was administrated among 300 adolescents students whereas (N=300, 150 male, 150 female) with (M = 15.6 yrs, SD= 1.6). The results have generally shown differences between genders in some variables. Computation of Person's correlation showed that intuition was positive significantly associated with creative motivation, emotional intelligence, and achievement motivation among the samples of males and females. The results of stepwise regression showed that creative motivation, emotional intelligence, and achievement motivation as predictors of intuition among the sample of males, and only emotional intelligence and creative motivation as predictors of intuition among the sample of female.

Keywords: Intuition, Creative motivation, Emotional intelligence, Achievement motivation

Introduction

Intuition represents an enormous challenge for research on decision making. What is intuition? How does it modify our appreciation of cognitive abilities? When should people trust intuition? (Robin, 2010). We challenge one of the underlying assumptions of the vast majority of intuition research in the field of management: namely that all intuition is judgment. As many of the management scholars interested in intuition are coming from the discipline of decision making/taking, this assumption appears to be taken for granted, so much so that it is usually not explicitly stated. However, we believe that this implicit presumption limits our understanding of intuition, which is particularly salient in the case of creative intuition (Victor, & Fran, 2012: 545). The definitions of intuition vary widely (Robert, Paul, & Ronald, 2005). Intuition has at various times been defined to be: a cognitive conclusion that is based on previous experience and emotional inputs (Burke & Miller, 1999), a complex, quick, nonemotional and nonbiased psychological process that is based on "chunking" that an expert hones over years of specific task experience (Khatri & Ng, 2000; Prietula & Simon, 1989), a daring conclusive leap (Bennett, 1998), a decision making process that cannot be expressed in words (Barnard, 1968), is encoding refers to the process of translating a mental state into an externally visible signal like a facial expression (DePaulo, 1992), a felt awareness for a situation as a whole (Bastick, 1982), a holistic mode of consciousness (Allinson, Chell, & Hayes, 2000). Thomas (2000) asserted that our intuition formation comes to us through our senses. As examples: Some people get a "gut feeling" about things. Others hear "a little voice," "see the light" or see "a fleeting image." Still others sense good or bad "vibrations." In the mathematical setting , the word intuitive means that a concept can be grounded in a person's deep-seated sense of familiar domains such as space, time, or in some other way " make sense" or :some right" in a way that does not involve explicit calculation or step-by-step reasoning (Ernest, 2021).

Jonas (2008) found that intuition a capacity associated with expanded wisdom, knowledge, intelligence, emotional, and creativity, has been traditionally associated with innovation, art, and

science. As for the rareness of the studies, and the field and theoretical studies in the eastern psychological heritage in the field of intuition. The present study has been applied to make a research on the relation of intuition with the creative motivation, emotional intelligence and the achievement motivation across a sample of the secondary school students in State of Kuwait. Moreover, to realize the nature of relations between intuition and the variables under study.

METHOD

Participants

The present study was administered among males and females secondary school students in State of Kuwait, were selected from Al-Farwanyah region, the total number of the subjects (N = 300) whereas (150 = males) and (150 = female) with (M = 15.6 yrs, SD = 1.6), Beside, for standardization purposes the researcher was administering the tools among other samples (N = 50) whereas (25 = males, 25 females).

The Questions of the Study

Five questions guided the present study:

1- Is there differences between gender effects among the variables of the present study?

2- Is there significant positive relationship between intuition and emotional intelligence among the samples of males and females?

3- Is there significant positive relationship between intuition and emotional intelligence among the samples of males and females?

4- Is there significant positive relationship between intuition and achievement motivation among the samples of males and females?

5- Does Creative motivation, emotional intelligence, and achievement motivation will be predictors of intuition among the samples of males and females?

Instruments

The researcher applied four scales to measure study variables that are: intuition, creative motivation, emotional intelligence and achievement motivation, with calculated its validity and reliability.

Results

t-test was used in order to detect the differences between males and females samples.Table2, presents mean differences across the variables under study as follows:

Table 1. Mean differences between genders across the variables

Variables	Gender	M	SD	t-values
Intuition	M	45.3	5.8	.90
	F	45.9	5.9	
Creative Motivation	M	50.1	7.6	1.9*
	F	48.3	7.4	
Emotional Intelligence	M	58.8	8.9	.86
	F	57.9	9.1	
Achievement Motivation	M	86.5	12.3	2.6**
	F	82.5	13.9	

***Note**:* *p<.05, **p<.01, Male (*N*=150), Female (*N*=150)

Table 1, present t-values for the differences between males and females across the variables under study, In creative motivation it was found that (t = 1.9, p<.05), in achievement motivation (t= 2.6, p<.01). Correlation matrix was computed of the samples of males and females. Table 2, present the correlation coefficients across the variables of male's sample as follows.

Table 2. Product moment production across the variables of male's

Variables	1	2	3	4
Intuition	1	.487**	.631 **	.443**
Creative Motivation		1	.470 **	.249**
Emotional Intelligence			1	.449**
Achievement Motivation				1

Note: **p< .01, Males sample (*N* = 150)

Table 2, presents the result s of correlations across the variables of male's sample, intuition was found to be significantly positive correlated with creative motivation (r = .487, p<0.1), emotional intelligence (r = .631, p<.01), and achievement motivation (r = .443, p<.01). Creative motivation was found to be significantly positive correlated with emotional intelligence (r = .470, p<.01), and achievement motivation (r = .249, p< .01). Emotional intelligence was found to be significantly positive correlated with achievement motivation (r = .449, p< .01). Table 3, presents the results of correlations across the variables of female's sample as follows.

Table 3. Product moment production across the variables of female's

Variables	1	2	3	4
Intuition	1	.324**	.432 **	.246**
Creative Motivation		1	.162 **	.324**
Emotional Intelligence			1	.300**
Achievement Motivation				1

***Note*:** **p< .01, Females sample (N = 150)

Table 3, presents the results of correlations across the variables of female's sample, intuition was found to be significantly positive correlated with creative motivation (r = 423, P<.01), emotional intelligence (r = .432, P<.01), and achievement motivation (r = .246, P<.01). Creative motivation was found to be significantly positive correlated with emotional intelligence (r = .162, P<.01), and achievement motivation (r = .324, P<.01). Emotional intelligence was found to be significantly positive correlated with achievement motivation (r = .300, P<.01). Stepwise regression analysis was conducted to find out the best set of predictors of intuition across the variables under study. The results are presented in the table 4, as follows:

Table 4. Summary of stepwise regression among male's sample dependent variable: intuition

Variables	B	Beta	SE	t-value	Sig	R^2	ΔR	
Emotional Intelligence	.416	.631	.042	9.9	.0001	.398	.000	
Creative Motivation	.189	.244	.054	7.4	.0001	.445	.047	
Achievement Motivation	.079	.166	.033	2.3	.0001	.466	.021	

Note: Males sample (N=150)

Table 4, reveals that emotional intelligence alone contributed 39.8% of the variance, then creative motivation 44.5% of the variance achievement motivation 46.6% of the variance.

Table 5, presents the result of stepwise regression among females as follows.

Table 5. Summary of stepwise regression among female's sample dependent variable: intuition

Variables	B	Beta	SE	t-value	Sig	R^2	ΔR^2
Emotional Intelligence	.285	.432	.049	5.8	.0001	.186	.000
Creative Motivation	208	.261	.058	3.6	.0001	.253	.067

Note: Female sample (N=150)

Table 5, reveals that when the independent variables entered in the regression model with intuition as a criterion of female's sample, emotional intelligence alone contributed 18.6% of the variance then creative motivation 25.3% of the variance.

Discussion

Referring to the statistical outcomes of the present study, they show there are differences between males and females samples among some variables under study, and there are significant positive relationships between the variables of the present study. It shows, too, that prediction of intuition is possible through most of the variables under study. The test of significance i.e. t-test was performed across the variables under study to find out the differences between males and females, the obtained results showed that there are no differences across the genders in intuition and emotional intelligence. This is due to many reasons. The most important among these reasons is scholastic activities (generally) are the same for both males and females students. These activities are supposed to develop, encourage, and enhance intuitional components and abilities of the students of both genders. So, there are no differences in the variable of intuition between the two genders, as the Ministry of Education in the State of Kuwait has to have a consideration of the individual and gender differences in the variable of intuition. On this ground, scholastic activities are designed and applied. What is true with scholastic activities is equally true with scholastic curricula. Noteworthy is that the contents of scholastic activities and scholastic curricula lack strategies for developing higher mental skills and abilities such as creativity and intuition.

Referring to previous studies about the relationship between intuition and gender, some studies show that there is no essential difference between males and females (Fallik & Eliot, 1985). Other studies show that females are more intuitive than males, as these studies traces this conclusion back to the interrelation between intuitive thinking and sympathizing and to the fact that females get higher values in sympathizing ability compared by males (Graham & Ickes, 1997). Such these conclusions and results need more researches and studies as they are still mere primary hypotheses. On another side, the results of t-test also indicated that there are essential differences between males and females in both creative motivation and achievement motivation as males surpassed females in these two variables. This is due to the nature of the samples of the present study, a sample governed by many restrictions and social traditions and conventions that grant males flexibility of movement and allow them to participate in unlimited social and societal activities, and interactions. Such interactions and participations have the effect to built and enhance in males sample many mental and personal abilities and skills, such as fluency, flexibility...etc. These are among the principle components of creation. Undoubtedly, this contributes in their motivation towards achievement. On the contrary, females are restricted by inherited social traditions and conventions to a great extent. The females (generally) can not participate in any social and societal activities as males. This had had a negative effect upon many of their mental abilities such as intuitive and creative abilities. Product moment Correlation for both the male and female samples demonstrated significant relationships between intuition with creative motivation, emotional intelligence, and achievement motivation whether across males or female samples. Bastick (1982) mentioned in his "Theory of Intuitive Thought" the relationship between intuition and the first three stages of the creative process, that are preparation, incubation, and illumination.

The surveying across various of the components of emotional intelligence such are emotional self awareness, managing emotions and handling relationships (Goleman, 2003), the integrating and interference of these components with each other strengthens the person's intuitive ability, as there is direct and indirect integration between the components of the intuition and the emotional intelligence, especially in the field of communication and direct interaction with the round environment. In the person that has a high level of the intuitive ability, his social relationships are strong, and he can manage his emotions and make new social relations, these advantages force the person himself to do more achievements across various his live levels. So, the motivation of the intuitive person becomes high because he can use his energy and abilities in achieving different of works and tasks. Stepwise multiple regression analysis was conducted across the male and female samples, it was observed that in males samples the most important predictors of intuition were emotional intelligence, creative motivation, and achievement motivation, but in the females sample were only emotional intelligence and creative motivation. We can predict the intuitive abilities of the person through his emotional intelligence, creative motivation, and achievement motivation abilities. This is a result of the interaction among the components of intuition and the variables under study as mentioned in the results of relationships between intuition and other variables in the correlation results and its discussion.

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Other professional sciences

«NATURA NON FACIT SALTUM»: SCIENTIFIC EVOLUTION OF COVID 19

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Abstract. Latin for «nature does not make jumps» has been an important principle of natural philosophy. The adage was, as is well known, adopted by Alfred Marshall as the motto for his "Principles of Economics", most probably as a borrowing from Charles Darwin's "Origin of Species." The principle expresses the idea that natural things and properties change gradually, rather than suddenly. In a mathematical context, this allows one to assume that the solutions of the governing equations are continuous. This paper examines the adage and extend to the Covid 19 premise that the virus – contrary to many scientist and Chinese authority maintain it abruptly mutated from bat to pangolins to animals to humans. According to "natura…" its impossible. Gain function process produced in lab multiplies the evolution process exponentially thus increasing the mutation process. This research maintains the virus gradually adopted from some source and did not make a big jump – as some scientist postulate. In the biological context, the principle was used by Charles Darwin and others to defend the evolutionary postulate that all species develop from earlier species through gradual and minute changes rather than through the sudden emergence of new forms.

TRANSFORMATION OF SKILLS IN CRITERIA AND METHODS FOR ASSESSING THE QUALITY OF THE PRODUCT AND SERVICE

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Abstract. The article presents the mechanism of transformation of skills in criteria and approaches for product quality assessment, as well as those in the management of medical practice.

Soft skills are related to personality traits. Wandering, individual, early and therefore difficult to manage. Soft skills cannot exist on their own because they ignore experience and continuity in the production that creates the product. They help to understand the perception of the product and the service. Solid skills can be frustrating, especially in extreme situations, such as medical emergencies. In the management of medical practice, soft criteria are used in some approaches: Quality web, Compass of clinical value, Compass of clinical value TQM, Method SERVQUAL.

The transformation of skills into quality criteria is carried out by finding new characteristics and improving the old characteristics of the product and service and production processes, driven by market requirements, competition and consumer needs, and their measurement forms the methods assessed quality. This transformation builds the governance process. The transformation of hard and soft skills into criteria and methods for assessing the quality of the product and service is a result of the evolutionary development of management practice, in search of a way to increase the productivity of production processes.

Keywords: soft skills, Quality web, Compass of clinical value, Compass of clinical value TQM, Method SERVQUAL

INTRODUCTION

When hiring employees, employers look for a balance between the hard and soft skills of the candidates, which does not exist perfectly. The search for this balance leads to progress in management because it reflects on the quality of the production process. The article presents the mechanism of transformation of skills in criteria and approaches for product quality assessment, as well as those in the management of medical practice.

1. ANALYSIS OF THE CONCEPT OF "SKILL"

By "skill" is meant the ability to do something based on knowledge and experience. In a broad sense, skill refers to skill, dexterity, dexterity, agility, dexterity. [1]

The definition defines human skill as consisting of two components: The first includes knowledge and experience. The second includes personal qualities - skill, dexterity, etc. (Table 1).

Table 1. Types of skills and characteristics

Skills	Characteristic
Hard- I-aspect of the concept of skills	Easy to learn; Measurable; Easy to evaluate. The experience in the profession and the presence of continuity are related.
Knowledge and experience	
Soft - II- aspect of the concept of skills	Difficult to learn; Hard to measure; difficult to assess. The qualities of the personality are connected. Congenital, individual and therefore difficult to manage
Dexterity techniques; Adaptability and communication, creativity, ethics, time management; motivation; Criticality; problem and conflict resolution.	

Dexterity, agility, dexterity, are specific to the individual, they are primarily innate and little studied. These skills are "soft" skills. In organizational management, soft skills are defined as related to the way people work. These also include interpersonal skills, communication, motivation, adaptability, creativity, time management, problem solving and conflict. Therefore, soft skills are non-technical, difficult to acquire. The qualities of the personality are connected and are partly innate, therefore - individual and therefore difficult to manage.

2. TRANSFER OF SKILLS IN CRITERIA FOR ASSESSING THE QUALITY OF THE PRODUCT / SERVICE

In the stages of the evolutionary development of management practice, in search of a way to increase the productivity of production processes, approaches to the study of human estates and their relations in the workplace have been formed. In management science, two schools are most in demand - the School of Scientific Management with the principles of management by Frederick Taylor and the School of Human Relations with the production of Mary Follett.

In the early twentieth century, Frederick Taylor collected and systematized the traditional knowledge of workers, developed every element of human labor training workers and thus turning skills into science, laid the foundations of scientific management. He came to the conclusion that high wages lead to high motivation, and hence to increased productivity and lower production costs, ie. high quality at low cost.

Introducing timing, breaking down the process into individual operations, lays the foundations for time and productivity management.

As a representative of the school of scientific management with his activity he focuses on:

- Study of solid skills, which in quality assessment become criteria for assessing technical quality indicators;

- Learning soft skills - such as motivation and time management, which finds expression in assessing the quality of the product / service in a number of assessment methods. For example: the TQM approach and the Just in Time and Kanban methods.

Technical skills are measurable because they are tangible. Soft ones are considered to be more difficult to measure. However, this is quite possible when the qualitative features are quantified through statistics. Therefore, soft skills are also measurable, especially in the case of product quality assessment. Such is the methodology SERVQUAL (Mineva, D.) [6], whose criteria are qualitative.

As a representative of the Human Relations Movement, Mary Follett studies the motivation, values, leadership and development of people as creative beings.

The results of the research of these two schools have contributed to the formation of methods for measuring and evaluating the quality of products and services (Figure 1).

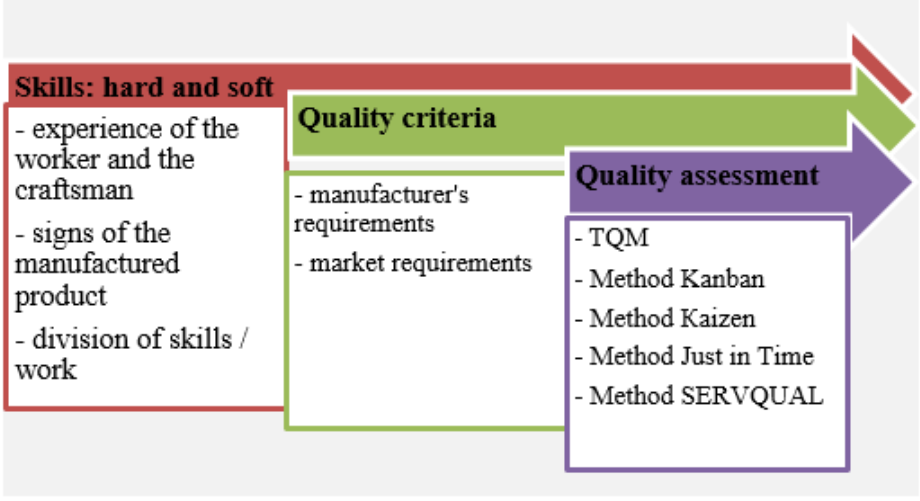

Figure 1. Transformation of skills into quality criteria and methods for quality assessment

The transformation of skills into quality criteria is carried out by finding new characteristics and improving the old characteristics of the product and service and production processes, driven by market requirements, competition and consumer needs, and their measurement forms the methods assessed quality. This transformation builds the management process.

3. SKILLS AS CRITERIA FOR ASSESSMENT OF QUALITY IN MEDICINE

In medicine, two types of criteria are known, which are based on hard and soft skills: Classical indicators and guiding frameworks.

According to the recommendation of the VHA "Voluntary Hospitals of America", the selection of indicators for quality assessment should be based on two criteria - the presence of points of contact of the indicators with patients and their ability to measure all aspects of measurement. There are two main types of quality assessment indicators in healthcare - classic indicators and guidelines.

The classic indicators are of two types: indicators of technical type (hard indicators) and indicators of non-technical type (soft indicators).

The indicators of technical type assess the performance or non-performance of an activity (technology, procedures, surgical interventions, injections, transport) by the provider of medical services. Non-technical indicators assess the "ability" of health care providers to provide medical services, which must reach the consumer satisfactorily. Soft indicators determine consumer expectations (accuracy, courtesy, pain response).

The guiding frameworks include: Triad Criteria, Quality Web and Compass of Clinical Value.

Through the Triad Criteria management framework, the quality of the hospital is assessed through three criteria: the result of the medical activity, the resources invested and the satisfaction of the patient. It is used in homogeneous patients and programs that are isoresource. When using the "Triad Criteria" guideline for quality assessment, it is understood that the price of quality is formed by all costs incurred by an organization, its products or services to meet established quality standards. The total costs of ensuring the quality of a product / service are formed by three types of costs: preventive costs, assessment costs and marriage costs. As an integrated approach to quality assessment, also in the sense of TQM can be used another triad of criteria - resources, process, results (V. Borisov, 1990) [4].

The Quality Cobweb framework is a technique that integrates hard and soft attributes that are constructed like cobweb axes. It measures the levels of feelings and expectations of patients to determine quality gaps and opportunities for improvement. It is suitable for inpatient and outpatient care.

The "Compass of Clinical Value" guiding framework is a technique that combines the tools of medical activity and organizational management. Assess the extent to which the positive change occurred due to the applied clinical and paraclinical processes [3].

The Compass of Clinical Value technique assesses technical quality. It allows for the breakdown of processes and their study. It is close to the Grønroos concept, but is also applicable to the SERVQUAL methodology and the Gap model.

In the sense of the principles of the TQM concept, the criteria for measuring quality depending on the type of management [6], whose origins are rooted in the value systems of Japanese and American society, deserve attention. Japan is a process-oriented society whose thinking embodies the Kaizen Concept. The United States is a result-oriented society. Result-oriented management is able to set goals and think strategically, but ignores motivation and regrouping resources. Two types of quality criteria meet the two types of management: P - criteria (process criteria) and R - criteria (result criteria).

P - criteria include support, encouragement and improvement actions. They value people's efforts and demand a change in behavior. In the quality circles the P-criteria include: number of solved problems and actions leading to improvement of the standards. R - criteria refer to the money invested in the results of the work. The P-criteria provide a long-term perspective, while the

R-criteria are direct and short-term. Taken together, the P-criteria and the R-criteria measure individual aspects of the TQM concept. While the P-criteria reflect the totality, the R-criteria reflect the result. This makes them equally important and indivisible [5].

CONCLUSION

• Soft skills are important, but they cannot exist on their own, because they ignore the experience and continuity in the production (hard) that creates the product.

• Soft skills help to understand the perception of the product and service.

• Hard skills can be frustrating, especially in extreme situations, such as medical emergencies.

The transformation of hard and soft skills into criteria and methods for assessing the quality of the product and service is a result of the evolutionary development of management practice, in search of a way to increase the productivity of production processes.

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DETERMINING THE IMPACT OF THE INTERACTION OF SIMULTANEOUS RISKS ON THE BANK AND THE ALTERNATIVE FORMULA FOR ITS QUANTITATIVE CALCULATION

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Abstract. The article reviews the existence of important interaction factors of the risks, acting at the same time in banking business and reflects author's formulas for its quantitative calculation. It is mentioned that calculation formulas of economic standards and limits of banking system simply summarize the risks acting at the same time and the important phenomenon of their impact on each other is not taken into consideration, as above mentioned issue is envisaged in the formulation of the calculation of the annual pace of inflation and the importance of quarterly interest rate. The author offers to eliminate the disadvantages in the formulas of calculation of banking standards which will strengthen the reliability of banking activities and improve the impact of risks.

Keywords: Banking risk, credit risk, inflation, credit, interest.

Introduction

The monograph reviews the existence of important interaction factors of the risks, acting at the same time in banking business and reflects author's formulas for its quantitative calculation. It is mentioned that calculation formulas of economic standards and limits of banking system simply summarize the risks acting at the same time and the important phenomenon of their impact on each other is not taken into consideration, as above mentioned issue is envisaged in the formulation of the calculation of the annual pace of inflation and the importance of quarterly interest rate. The author offers to eliminate the disadvantages in the formulas of calculation of banking standards which will strengthen the reliability of banking activities and improve the impact of risks.

We want to pay attention to author's opinion **''News in nature, Economics, Finance, Banking is not only well forgotten old, as it relates to history, but also the future of the unseen, unknown thing".** It is also important to note that **"the evil is not the risk itself, but the only risk that is wrongly assessed and managed."**

We can have a big talk and discussion about the types of credit risk, its essence, classification, assessment methods and their reduction, but now our aim is to demonstrate how the credit risk analysis of the potential borrower is implemented and what special problem we have found out while evaluating it.

Typically, there are following types of risks: market risk, liquidity risk, operational risk, percentage risk, currency risk, business risk, settlement risk, legal risk, reputation risk, credit risk, world risk, regional risk, sector risk, customer risk, production risk, payment risk, project risk, provision risk and others.

The issues for effective management of the risks are raised in the first order, by the efforts of banking activity in bank management, in order to protect clients' interests and provide financial stability of the bank.

The risks, acting at the same time, play the main role in the assessment process of the activity and financial position of the bank. **Risk means-indefinition of future cash flows, the probability of total loss of loses or revenues presented in the depiction of value, compared to what is planned.**

Methods

The supervisory authorities use mandatory economic regulations and limits to regulate banking activity, including the purpose of restricting the impact of certain types of risks on it. At the same time, the norms of the risks, that determine their permissible limits have the greatest importance while considering the given problem. Let us consider practical examples (Tsaava., 2018:354):

1. Formula for the general norm of the bank's risk (Np) is presented in this way, we want to mention that, here the Bank's allowable risk indicators (internal bank risks: structural, risk of banking customer, settlement, emission, criminal activities of the bank employees, active and passive operations and capital, i.e balance, credit, interest, currency, refinancing, unbalanced liquidity, inadequate divertification of operations, i.e banking specialization risks) are summarized in the calculation formulas and an important factor of their influence is neglected, as the mentioned situation, monthly inflation rates are intended to influence each other in annual inflation rate calculation formulas (Tsaava., 2018:405):

$$Nr = (R1 + R2+ ... + Ri + \dots + Rn) \times E / K,$$

here: Nr – is the bank's permissible common risk level;

Ri – Bank's risks;

i – according to operations or risks considering weighted assets (i = 1, 2, … , n);

E – global risks (foreign risks);

K – bank's capital.

The criterion level of the total risk is within 10 units:

- N = (0 – 5) - is bank's low risk level, that can be ignored for some time;
- N = (5 – 10) – is average risk level, that requires diligent attention from banking institution;
- N = 10 - is high risk level, high benchmark can cause bankrupcy.

2. Economic norm for commercial banks kk1 (Primary capital coefficient) – considers that the bank's primary capital should be at least 8 percent of the weighted assets (3, page.282), where the weighted assets according to the risks are just assembled (summarized).

3. Economic norm for commercial banks kk2 (Supervisory Capital Coefficient) – considers that the bank's primary capital should be at least 12 percent of the weighted assets (Tsaava., 2018:408), where the weighted assets according to the risks are assembled (summarized) again.

As a result of deepening in above mentioned three examples-the formula for calculating the general norm of the bank's risk, the structure of formulas of economic regulations (kk1 da kk2) established for commercial banks, the author of the given article mentions that the credit risk values (R1 + R2+ ... + Ri + … + Rn) given in the formulas and the results of the risk weighted assets are simply summarized and the level of impact (phenomenon) directly on each other is not provided, as the mentioned inflation factor is derived in annual pace calculation formula $[(1 + r_{თვ.})^n - 1] \times 100\%$ (1, p. 48). For example, if monthly inflation is generally 9% during the year, then the annual inflation will not be equal to (9% x 12 months) = 108%, but considering the impact of the monthly inflation values on each other, it will be:

$$\mathbf{[(1 + r_{m.})^n - 1] \times 100\% = [(1 + 0{,}09)^{12} - 1] \times 100\% = (1{,}09^{12} - 1) \times 100\% =}$$
$$\mathbf{= (2{,}813 - 1) \times 100\% = 1{,}813 \times 100\% = 181{,}3\%}$$

This means, that considering the impact of inflation rates of different months on each other during the year (rather than simply summarizing their values) the coefficient of real meaning will be (181,3 : 108) = multiple of 1,6

Even so, the monthly inflation rate of 9% in the country is unrealistic, the author formulates the schedule for the calculation of real annual inflation and growth coefficients considering the monthly inflation under the circumstances of 0,3-0.7 in Georgia and monthly inflations directly affectiong on each other (see Table 1).

Table 1. Information about the calculation of the real annual pace of inflation considering the impact of monthly inflations on each other

Monthly inflation %	**Annual inflation is ($r_{m..}$ x 12) =**	**Annual inflation is formulated [$(1 + r_{m.})^{12}$ -1] x 100%=**	**Growing ratios Equal to:**
Monthly inflation 0,3%	(0,3 x 12) = 3,6%	$[(1 + 0,3)^{12}$ -1] x 100% = 4,26%	K = 4,26/3,6 = 1,2
Monthly inflation 0,4%	(0,4 x 12) = 4,8%	$[(1 + 0,4)^{12}$ -1] x 100% = 6,01%	K = 6,01/4,8 = 1,3
Monthly inflation 0,5%	(0,5 x 12) = 5,0%	$[(1 + 0,5)^{12}$ -1] x 100% = 7,56%	K = 7,56/5,0 = 1,3
Monthly inflation 0,6%	(0,6 x 12) = 7,2%	$[(1 + 0,6)^{12}$ -1] x 100% = 10,12%	K = 10,2/7,2 = 1,4
Monthly inflation 0,7%	(0,7 x 12) = 8,4%	$[(1 + 0,7)^{12}$-1] x 100% = 12,52%	K = 12,52/8,4 = 1,5

The table shows that , the total size of different types of risks operating at the same time in the numerator of the formula should be increased at least 1,3 to 1,4 (multiple of 1,35), i.e 35 % according to the formula of Calculation of General Bank Risk Norm (N_r), considering the factor of impact of jointly operating risks of the bank on each other and the criterion level of admission will have the following look: 1) low level (Nr = 0 - 4) ; 2) an average level (Nr = 4 - 7), 3) high level (7 and more) .

The author offers correct calculation formula, considering the allowing quality of the bank's overall risk and interaction of different risks simultaneously acting according to the bank's operations, on the basis of which the value in the numerator of the formula will be increased by 35%. The mentioned formula will have the following look:

$$\mathbf{Nr = [[(1 + ((R1 + R2 + ... + Ri) / i))^{12} -1] x 100] x E / K,}$$ **(**Version I**)**

here: Nr – the allowing quality of the bank's overall risk, considering the impact of jointly operating risks on each other;

Ri – Bank's risks; i – considering the operations or risk weighted assets

(i = 1, 2, … , n);

i – Total number of risks operating at the same time;

E – Global risks (foreign risks);

K – Bank's capital

The calculation formula of the volume of interests for using credit can also be used as a proof argument of modification of the given formula. It is known that the payment of interest (for using credit) is permitted monthly by individual entrepreneurs, and by legal entities - monthly or quarterly. Quarterly value from the monthly value of interest rate is calculated on the basis of the following formula:

$$\mathbf{J = [(1 + i / 12) x 3 - 1] x 4,}$$

here: J – is annual interest rate during the quarterly payment of the interests;

i - is annaul interest rate during monthly payment of the interests, divided into 100.

Let's assume that monthly interest rate is equal to 2%, i.e = 0,02, then a payment for quarterly interest rate is not equal to (2 x 3) = 6%, but:

$$\mathbf{J = [(1 + 0,02 / 12) x 3 - 1] x 4 = [(1 + 0,0017) x 3 - 1] x 4 =}$$
$$\mathbf{= [(1 + 0,0017) x 3 - 1] x 4 = (3,0051 - 1) x 4 = 2,0051 x 4 = 8,02\%.}$$

Therefore, considering the impact of quarterly (3 months) monthly interest rates on each other, growth coefficient will be equal to (8,02% : 6,0%) = 1,34. Thus, depending on the monthly rates of the interests, the formula of bringing down its quarterly base confirmed, according to the calculation formula of the annual inflation rate, the accuracy to increase monthly inflation by 35% and the identity of the result, i.e as a result of calculation, considering the impact of simultaneous risks on each other, its value must be increased from 1,3 to 1.4 (multiple of 1,35), i.e increased by

35%. Therefore, the formula for calculating the general norm of the bank's risk may have the following look:

Nr = 1,35 x (R1 + R2+ ... + Ri + … + Rn) x E / K. (Version II)

If the methodology and formula are adopted during the calculation of the bank's real risk level offered by us, considering the impact of each of the risk factors, then the mentioned thing will be followed by adjusting existing methods, such as compulsory regulations established by the National Bank, as well as Cromonon V. According to the methodology of determining the solvency of bank-partners, according to alman or "Z analysis", the methodology of predicting possible bankruptcy of the enterprise-borrower, etc. It is advisable to take into consideration the factor of the interaction of risks operating at the same time in calculation formulas.

Results:

By considering the above, we can make the following conclusion:

1. It is estimated that, the values of credit risks are simply assembled (summarized) in the numerator of the formula given in this article during the calculation of the general norm of the bank's risk and the impact on each other is not provided, as such an important event, is confirmed in the calculation formulas of the annual inflation rate and adjusting the monthly interest rate to quarterly basis for using credit.

2. An adjusted formula for calculation of the total risk availability of the bank's risk is offered, where it is envisaged that the Bank's operations have different impacts on each other at the same time, based on which the value of the risks is increased at least by 35 % in the numerator of the formula and the above mentioned issue should be followed by adjusting the existing methodology and standards.

Nr = [[(1 + ((R1 + R2 + ... + Ri) / i))^{12} -1] x 100] x E / K . (Version I);

Nr = 1,35 x (R1 + R2+ ... + Ri + … + Rn) x E / K. (Version II).

Discussion

Consequently, we, on the basis of the tales of the two paragraphs at the beginning of this monograph: "detection of the existence of the present, but invisible and unknown factor “ and "the evil is not the risk itself, but the only risk that is wrongly assessed and managed" and considering the problems , can conclude that, all the compulsory banking standards, which calculation formulas only summarize the risks acting at the same time and do not consider the interaction factor. We consider the mentioned phenomenon, which will tightens the existing compulsory standards at least by 35% and therefore risk of banks will become real and the financial position and sustainability of the banking business will be regulated.

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PREPARATION OF SOFT SKILLS FOR BACHELOR OF ENGLISH LANGUAGE TEACHING PROGRAMS IN VIETNAM

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The Bachelor of English Language Teaching Programs in Vietnam has been changing remarkably since the Vietnam National Foreign Language Project 2020 ('Project 2020') commencing in 2008. This was the largest investment in English language teaching and learning, at all levels across the country, strongly indicated by Decision No 1400/QD-TTg. Never before had English language teaching and learning been such an important issue. The Project 2020 stressed the tasks to implement new, compulsory English programs to meet the outcomes required of the higher education students.

The requirement of investing in and developing English Language Teaching (ELT) across the whole country was specifically remarked by many national decisions, circulars, and effective plans via the Ministry of Education and Training. All the policies aimed to improve qualities of Bachelor of English Language Teaching Programs in order to respond to human resource demands or requirements in line with a rapidly changing global context. The English language proficiency of students and graduates from these Bachelor of English Language Teaching Programs across both provincial and metropolitan institutions has been reported to be improving dramatically.

However, graduates from these Bachelor of English Language Teaching Programs have been reported to lack of soft skills related to teaching (presentation, critical thinking, and team-working skills) and skills of social integration.

My project was conducted with the aim of investigating how the institutional Bachelor of English Language Teaching programs have provided their students with soft skills. The project was conducted across a large number of institutions across parts of Vietnam.

The findings of the project provided a better understanding about the perceptions of lecturers and students about their opportunities and challenges to achieve the soft skills necessary for their professional career after graduation.

The project discussed strategies to adapt Bachelor of English Language Teaching programs to fit the social expectations for graduates in an era of ever-increasing international opportunity. The project offered multiple perspectives on a complex issue. It was meaningful not only to educational governance, but also to teaching practitioners and English language researchers. It helped to develop the English teaching profession in Vietnam in a systematic way, from policy makers to implementers, and from instructors to learners.

EMOTIONAL INTELLIGENCE AS AN ESSENTIAL SOFT SKILL FOR SUCCESS

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Abstract. We are living in very tempting and uncertain times, where people have to be equipped with a strong arsenal of strong psychological tools and skills to be able to navigate through the current unexpected changes of the modern world, especially during the pandemic and all its consequences.

Emotional Intelligence (EQ) is believed to have a number of positive features that have the potential of changing your life for the better and equipping you with soft skills to handle life successfully alongside with handling your emotions, as well as the emotions of the others.

The present paper discusses the main components of Emotional Intelligence as a set of soft skills that will help you succeed in both your private and business lives, as well as in the academia.

Emotional Intelligence and its Components

The term "*Emotional Intelligence*" (EQ) is very often used nowadays as one of the prerequisites for success. It has been defined, by Peter Salovey and John Mayer (1990, 1993), as the ability to monitor one's own emotions, as well as the other people's emotions, to differentiate between different emotions and label them appropriately, and to use emotional information to guide thinking and behavior. This definition was later broken down and refined into four proposed abilities of emotional intelligence by the American psychologist Daniel Goleman in his book "Emotional Intelligence" (1995): *perceiving*, *using*, *understanding*, and *managing* emotions.

Now let us have a closer look at these different, but corelated processes:

1. Perceiving emotions: the ability to get emotional messages from the outward world and to detect emotions in faces, pictures, voices, and cultural artifacts. This includes not only perceiving the emotions in the others but also the ability to identify one's very own emotions. Perceiving emotions represents a basic and grounding aspect of emotional intelligence, as it makes all other processing of emotional information possible.

2. Using emotions: the ability to deploy emotions to facilitate various cognitive activities, such as thinking and problem-solving activities. The emotionally intelligent person can capitalize fully upon his or her changing moods in order to best fit this or that task at hand. Besides, one can also use his or her very own emotions to have an emotional impact on the other through gestures, facial expressions, voice fluctuations, mimics, such emotive words and phrases as positive and/or negative intensifiers, etc. (Rostomyan, 2013b).

3. Understanding emotions: the ability to comprehend emotive language and to understand the emotions in the others in order to be able to preserve healthy relationships, which also presuppose emotions. For example, in the process of communication trying to understand the viewpoint of the other person, his or her intentions, internal motivations, feelings, beliefs, desires, etc. (Rostomyan, 2020). It also involves understanding the slight variations between positive and negative emotions, and the ability to recognize and describe how emotions evolve over time in interpersonal interaction.

4. Managing emotions: the ability to regulate emotions in both ourselves and in others. Therefore, the emotionally intelligent person can tune in with the emotions, even negative ones, and manage them to achieve the intended goals. This also includes managing the expressions of emotions on the verbal and non-verbal levels for harmonious cooperation and for communicative conflict reduction (Rostomyan, 2013a).

As we can see, all the aforementioned processes are tightly intertwined and do not exist in separation, so in our everyday life while interacting with one another we are continually practicing them, which are the groundings of our emotional experiences.

D. Goleman (1995) when discussing the complexity of emotional intelligence and its value and impact on human lives has spoken about 5 main domains of EQ, namely *self-awareness, self-management, motivation, empathy* and *relationship management.*

EQ or otherwise shortly called for "intelligence" as EI is truly very important for everyone who wants to be career ready both in business and the academia. Drawing on the work of Daniel Goleman (1995, 2003), below are discussed these five aforementioned pillars of emotional intelligence and how they give you an advantage in the workforce and in your personal and professional relationships, as well as some advice is given how to raise these abilities for healthier experiences.

Self-awareness:

Self-awareness is the ability to recognize one's very own emotions, emotional triggers, strengths, weaknesses, motivations, values, desires and goals and to understand how these affect one's thoughts and behaviour. To raise your emotional self-awareness, it is recommended to reflect on your behaviour and your feelings from aside to understand why are you feeling or acting in this or that particular way, because when you understand the cause, half of the problem will be solved. Truly, if you are self-aware, you can be more at peace with yourself and with the surroundings.

Self-management:

Self-management is the ability to regulate one's own emotions. Everyone – including those with a high EQ – sometimes experiences bad moods and negative emotions like anger and stress, but self-management is the ability to control these emotions rather than having them control yourself. Self-management involves both mental and verbal levels of managing the expressions of emotions. One advice when experiencing a very strong negative emotions can be to calm down before responding to that negative emotional trigger. Yet this does not mean that you always have to inhibit or suppress your negative emotions, sometimes you have to let them flow and build relationships accordingly not to harm your mental psychological state by always suppressing them, since they can also be constructive in establishing and building strong relationships.

Motivation

Motivation is essentially what moves us towards taking an action. When we face setbacks and obstacles, checking in with our motives is what inspires us to keep pushing forward. Sometimes outward impulses may motivate us, e.g. seeing someone succeed, and sometimes our inner emotional impulses, e.g. aspiration, inspiration, will and desire to succeed, etc. may motivate us towards success. To keep you motivated you can sometimes remember all your successes that you have had or to have a role model whom you'd wish to take after. Motivation is the driving force of ours towards accomplishments and we should not get de-motivated by failures, since as they say failure is a step towards success both in our personal and professional lives.

Empathy

Empathy is the ability to connect emotionally with the others and take into consideration their emotions, feelings, concerns, doubts, aspirations and points of view. Empathy is the highest form of emotional intelligence, where you tune in with the other's emotions and build your actions upon them. Empathy is also essential for team harmony. Noticing and responding to the emotional needs of the people you work with makes for a happy work culture. To raise your empathetic skills, you can try to feel in someone else's shoes when trying to understand their behaviour and actions. This also includes *compassion* towards the others and feeling and understanding their emotions.

Relationship management:

Relationship management is all about interpersonal skills, that is one's ability to build genuine trust, rapport, connection and respect with your peers, relatives, friends and colleagues. Truly, when interacting with one another, we have to be skillful emotions readers to be able to build long-lasting and harmonious interpersonal relations, which will strengthen our relationship

management skills. Therefore, while trying to build a relationship, it is highly recommended to pay attention to the others' emotions and feelings as well.

All the aforementioned EQ skills are in fact are important soft skills ensuring and giving value to our peaceful and successful success in life both in private and professionally.

Conclusion

In life, we almost always experience some sort of emotion or feeling. Moreover, our emotional state may vary throughout the whole day. Therefore, we need some soft skills to handle life and to succeed in it accordingly.

The discussed skills above are the main pillars in one's emotional intelligence, which is sometimes even considered to be more important and helpful than one's IQ in handling stressful situations.

To sum up with, although emotional intelligence seems to come naturally to some of us, our brain's plasticity means we *can* indeed increase our emotional intelligence with the soft skills of which we will be able to become more skillful communicators and successful interactants.

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STUDY OF A FUNCTION FOR CONCAVITY (UP AND DOWN) AND INFLECTIONS USING THE MECHANICAL (PHYSICAL) MEANING (INTERPRETATION) OF THE SECOND DERIVATIVE

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Earlier, the author expressed the true mechanical (physical) meaning of the second derivative of the function, that is, the value of the second derivative at a given point is equal to the value of the instantaneous acceleration of the change in the value of the function at this point, that is, the rate of change in the rate of change of the value of the function at this point.

Recall that a critical point of the second order is a point on the real axis at which the second derivative of the function is zero or does not exist. Also let us recall the differential signs of concavity (up and down) of a function and rephrase them from a mechanical (physical) point of view:

1. If the function is concave up on any interval, then its second derivative is positive, that is, the value of the instantaneous acceleration of the change in the value of the function is positive;

2. If the function is concave down on any interval, then its second derivative is negative, that is, the value of the instantaneous acceleration of the change in the value of the function is negative.

Note that at critical points where the second derivative of the function is equal to zero, the value of the instantaneous acceleration of the change in the value of the function is equal to zero.

Let us also recall the First rule of sufficient conditions for the existence of inflections of functions, that is, the study of inflections using the second derivative and rephrase from a mechanical (physical) point of view:

1. If, when passing through a critical point of the second order on the numerical axis from left to right, the second derivative of the function, that is, the value of the instantaneous acceleration of the change in the value of the function changes its sign from positive to negative, then this critical point is the inflection point, at which the upward concavity of the function is replaced by its downward concavity;

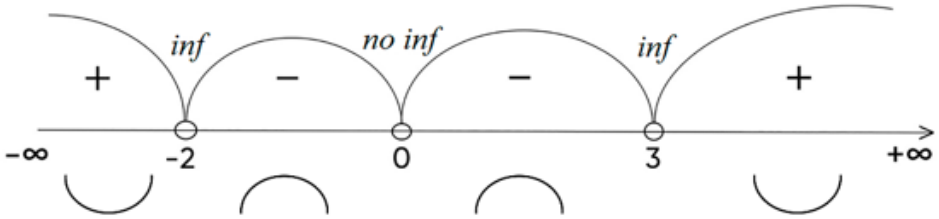
2. If, when passing through a critical point of the second order on the numerical axis from left to right, the second derivative of the function, that is, the value of the instantaneous acceleration of the change in the value of the function changes its sign from negative to positive, then this critical point is the inflection point, at which the downward concavity of the function is replaced by its upward concavity;

3. If, when passing through a critical point of the second order on the numerical axis from left to right, the second derivative of the function, that is, the value of the instantaneous acceleration of the change in the value of the function does not change its sign, then this critical point is not at all an inflection point of the function, that is, it is a point at which the nature of the concavity does not change.

Example. Examine the function $f(x) = 2x^6 - 3x^5 - 30x^4 + 15x + 1$ for concavity and inflections using the second derivative.

Solution. $f'(x) = 12x^5 - 15x^4 - 120x^3 + 15 \Rightarrow f''(x) = 60x^4 - 60x^3 - 360x^2 = 60x^2(x^2 - x - 6)$. We equate the second derivative to zero and find the roots of the resulting equation, which are thus the critical points of the second order:

$f''(x) = 0 \Rightarrow 20x^2(x^2 - x - 6) = 0 \Rightarrow x_1 = -2;\ x_2 = 0;\ x_3 = 3$ are critical points of the second order. Let's put these points on the real axis and determine the signs of the second derivative of the function in the intervals between these critical points. To do this, we solve the inequality $f''(x) \vee 0$ by the interval method:



As you can see, the function under consideration is concave up on intervals $(-\infty;-2) \cup (3;+\infty)$, that is, in these intervals the value of the instantaneous acceleration of the change in the value of the function is positive and is concave down on intervals $(-2;0) \cup (0;3)$, in which the value of the instantaneous acceleration of the change in the value of the function is negative. At all critical points, $x = -2$, $x = 0$ and $x = 3$, the second derivative of the function is equal to zero, that is, at these critical points the value of the instantaneous acceleration of the change in the value of the function is equal to zero.

The drawing also shows that the critical point $x = -2$ is an inflection point, at which the upward concavity of the function is replaced by its downward concavity, that is, the value of the instantaneous acceleration of the change in the value of the function changes its sign from positive to negative; the critical point $x = 3$ is an inflection point, at which the downward concavity of the function is replaced by its upward concavity, that is, the value of the instantaneous acceleration of the change in the value of the function changes its sign from negative to positive; and the critical point $x = 0$ is not an inflection point at all, that is, it is such a point, at which the nature of the concavity does not change, that is, the value of the instantaneous acceleration of the change in the value of the function does not change its sign.

SOLVING ANOTHER PART OF THE SIMPLEST MODULAR TRIGONOMETRIC INEQUALITIES USING TRIGONOMETRIC FORMULAS FOR LOWERING THE DEGREE

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This article deals with trigonometric inequalities of the following types:

$$|tan\,x| < a;\ |tan\,x| > a;\ |cot\,x| < a;\ |cot\,x| > a,$$

where *a* are constant positive numbers.

Earlier, the author considered the solutions of these modular trigonometric equations using the monotonicity of trigonometric functions.

This time, we first square both sides of each of these trigonometric inequalities:

$$|\,tan\,x|^2 < a^2; |\,tan\,x|^2 > a^2;\ |\,cot\,x|^2 < a^2;\ |\,cot\,x|^2 > a^2,$$

or

$$tan^2x < a^2;\ tan^2x > a^2;\ cot^2x < a^2;\ cot^2x > a^2.$$

Next, we apply the following trigonometric formulas for lowering the degree:

$$tan^2x = \frac{1-cos\,2x}{1+cos\,2x} \quad \text{and} \quad cot^2x = \frac{1+cos\,2x}{1-cos\,2x}.$$

Then we will have:

$$\frac{1-cos\,2x}{1+cos\,2x} < a^2;\ \frac{1-cos\,2x}{1+cos\,2x} > a^2;\ \frac{1+cos\,2x}{1-cos\,2x} < a^2;\ \frac{1+cos\,2x}{1-cos\,2x} > a^2,$$

or

$$1-cos\,2x < a^2 + a^2\,cos\,2x\,;\ 1-cos\,2x > a^2 + a^2\,cos\,2x\,;$$

$$1+cos\,2x < a^2 - a^2\,cos\,2x\,;\ 1+cos\,2x > a^2 - a^2\,cos\,2x\,,$$

or

$$cos\,2x > \frac{1-a^2}{1+a^2};\ cos\,2x < \frac{1-a^2}{1+a^2};\ cos\,2x < \frac{a^2-1}{a^2+1};\ cos\,2x > \frac{a^2-1}{a^2+1}.$$

We obtain the simplest trigonometric inequalities.

At the end, we will confirm the obtained formulas with specific examples.

Example 1. $|tan\,x| < 1 \Rightarrow cos\,2x > \frac{1-1^2}{1+1^2} \Rightarrow cos\,2x > 0 \Rightarrow$

$\Rightarrow -\frac{\pi}{2} + 2\pi k < 2x < +\frac{\pi}{2} + 2\pi k\ (\div 2) \Rightarrow -\frac{\pi}{4} + \pi k < x < +\frac{\pi}{4} + \pi k \Rightarrow$

$\Rightarrow x \in \left(-\frac{\pi}{4} + \pi k; +\frac{\pi}{4} + \pi k\right).$

Example 2. $|tan\,x| > 1 \Rightarrow cos\,2x < \frac{1-1^2}{1+1^2} \Rightarrow cos\,2x < 0 \Rightarrow$

$\Rightarrow \frac{\pi}{2} + 2\pi k < 2x < \frac{3\pi}{2} + 2\pi k\ (\div 2) \Rightarrow \frac{\pi}{4} + \pi k < x < \frac{3\pi}{4} + 2k \Rightarrow x \in \left(\frac{\pi}{4} + \pi k; \frac{3\pi}{4} + \pi k\right).$

Example 3. $|cot\,x| < 1 \Rightarrow cos\,2x < \frac{1^2-1}{1^2+1} \Rightarrow cos\,2x < 0 \Rightarrow$

$\Rightarrow \frac{\pi}{2} + 2\pi k < 2x < \frac{3\pi}{2} + 2\pi k\ (\div 2) \Rightarrow \frac{\pi}{4} + \pi k < x < \frac{3\pi}{4} + 2k \Rightarrow x \in \left(\frac{\pi}{4} + \pi k; \frac{3\pi}{4} + \pi k\right).$

Example 4. $|cot\,x| > 1 \Rightarrow cos\,2x > \frac{1^2-1}{1^2+1} \Rightarrow cos\,2x > 0 \Rightarrow$

$\Rightarrow -\frac{\pi}{2} + 2\pi k < 2x < +\frac{\pi}{2} + 2\pi k\ (\div 2) \Rightarrow -\frac{\pi}{4} + \pi k < x < +\frac{\pi}{4} + \pi k \Rightarrow$

$\Rightarrow x \in \left(-\frac{\pi}{4} + \pi k; +\frac{\pi}{4} + \pi k\right).$

ON ONE SOLUTION OF THE SCHRÖDINGER EQUATION GENERATED BY THE BESSEL q -OPERATOR IN QUANTUM CALCULUS

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Throughout this work, we assume that $0 < q < 1$. We start by recalling some basic notation in the q -calculus, see e.g. the books [1], [2] and [3].

Let $\alpha \in R$. Then a q -real number $[\alpha]_q$ is defined by

$$[\alpha]_q = \frac{1-q^\alpha}{1-q}$$

where $\lim\limits_{q\to 1} \frac{1-q^\alpha}{1-q} = \alpha$.

We introduce for $k \in N$:

$$(a;q)_0 = 1,\ (a;q)_n = \prod_{k=0}^{n-1}(1-q^k a),\ (a;q)_\infty = \lim_{n\to\infty}(a;q)_n,\ (a;q)_\alpha = \frac{(a;q)_\infty}{(q^\alpha a;q)_\infty}.$$

The q -analogue of the binomial coefficients $[n]_q!$ are defined by

$$[n]_q! = \begin{cases} 1, & if\ n = 0, \\ [1]_q \times [2]_q \times \cdots \times [n]_q, & if\ n \in N, \end{cases}$$

The q^2 -differential operator is defined by

$$\partial_q f(x) = \frac{f(q^{-1}x) + f(-q^{-1}x) - f(qx) + f(-qx) - 2f(-x)}{2x(1-q)}$$

where $x \neq 0$.

The definite q -integral or the q -Jackson integral of a function f is defined by the formula

$$\int_0^x f(t) d_q t := (1-q)x\sum_{k=0}^{\infty} q^k f(q^k x), \qquad x \in (0,b),$$

and the improper q -integral of a function $f(x):[0,\infty) \to R$, is defined by the formula

$$\int_0^\infty f(t) d_q t := (1-q)\sum_{k=-\infty}^{\infty} q^k f(q^k).$$

We denote $R_q^+ = \{q^k, k \in Z\}$ and define

$$L_{\alpha,q}^{p}\left(R_q^+\right):=\left\{ f:\|f\|_{p,\alpha,q}=\left(\int_0^\infty |f(x)|^p\, x^{2\alpha+1} d_q x\right)^{\frac{1}{p}}<\infty \right\}.$$

For $\lambda \in C$, the function $j_\alpha\left(\lambda x;q^2\right)$ is the unique even solution of the problem

$$\begin{cases} \Delta_{q,\alpha} f(x) = -\lambda^2 f(x), \\ f(0)=1, \end{cases}$$

where

$$\Delta_{q,\alpha} f(x)=\frac{1}{|x|^{2\alpha+1}}\partial_q\left[|x|^{2\alpha+1}\partial_q f(x)\right].$$

Moreover, if f and $\Delta_{q,\alpha} f$ are in $L_{\alpha,q}^1\left(R_{q,+}\right)$

$$F_{q,\alpha}\left(\Delta_{q,\alpha} f\right)(\lambda)=-\lambda^2 F_{q,\alpha}(f)(\lambda).$$

We consider the Schrodinger Equation generated by the q-Bessel operator $\Delta_{q,\alpha} f$ in the following form:

$$\partial_t u(t,x)-i\Delta_{q,\alpha,x}u(t,x)=f(t,x),\quad (t,x)\in[0,T]\times R_q^+, \tag{1}$$

$$u(0,x)=\varphi(x),\qquad x\in R_q^+. \tag{2}$$

where the function φ is given functions.

Theorem 2. Let $0<\alpha<1$. Suppose that $f\in C^1\left([0,T],L^2(\mu)\right)$ and $\varphi\in W_q^{1,2}(v)$. Then the problem (1)-(2) has a unique solution $u\in C^\alpha\left([0,T],L^2(\mu)\right)\cap C\left([0,T],W_q^{1,2}(v)\right)$ and can be represented by formula

$$u(t,x)=c_{q,\alpha}^2\int_0^\infty\int_0^\infty \exp\left(-i\lambda^2 t\right)\varphi(x) j_\alpha\left(\lambda x;q^2\right)x^{2\alpha+1} j_\alpha\left(\lambda x;q^2\right)\lambda^{2\alpha+1} d_q x d_q\lambda$$
$$+c_{q,\alpha}^2\int_0^t\int_0^\infty\int_0^\infty \exp\left(-i\lambda^2(t-s)\right)f(s,x) j_\alpha\left(\lambda x;q^2\right)x^{2\alpha+1} j_\alpha\left(\lambda x;q^2\right)\lambda^{2\alpha+1} d_q x d_q\lambda ds.$$

Acknowledgments

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Agricultural sciences

BEHAVIOUR OF SHEPHERD DOGS

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Keywords: Shepherd dogs, behaviour, kangal, akbash, Turkey, Serbia

The growth of interest to the domestic animals behaviour, including dogs, is noticed recently. Many universities are conducting the study of behaviour of animals kept as hobby pets or out of economic benefit. There is a lack of information on the behaviour of shepherd dogs in the available literature. The group of working dogs is quite big so the information about them is quite important for the stockbreeders. There is almost no description of shepherd dogs' behaviour in their real life, their day and night work with livestock in their natural environment in the mountains.

The monitoring of shepherd dogs was held in The Caucasus area, in Turkey, Bulgaria, Romania, Serbia, Bosnia and Herzegovina. Most of the monitoring was held and the analyses of their behaviour were made in Turkey at the Anatolia area. Besides the behaviour study of the Turkish shepherd breeds - Kangal and Akbash, the number of zoo-technic measurements of their morphometric parameters was taken there. The morphometric study of Kangal resulted in the official breed standard approved by the Federation Cynologique Internationale (FCI). Kangal was acknowledged worldwide as indigenous Turkish dog breed. Anyway, this is a subject for a special report.

The surveillance of these shepherd dogs started in 2008 and lasted till 2014. The recent monitoring was held in Serbia in 2019. In Turkey we visited with our colleagues from Cynological Federation of Turkey (KIF) a number of mountain places between Eskişehir in the West and Sivas in the East.

While monitoring the shepherd dogs we especially watched their life and work behaviour:

1. in the pack
2. attitude to the strangers
3. livestock protection
4. paddock guarding
5. livestock grazing
6. meeting strangers during the grazing
7. rest time between grazing periods
8. alarm signal,
9. milking of livestock
10. night guarding
11. behaviour with puppies
12. dogs feeding
13. herd on the road

Shepherd dogs were monitored at various kinds of weather, round the clock. We gave no influence on the dogs work or on the sheep behaviour.

We've got a lot of information. This is just a short abstract.

STRATEGY FOR BIG DATA USING HADOOP SOFTWARE

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Abstract. In this research, technological trends based on the concept of Industry 4.0 have been analyzed, in terms of the technologies that support this paradigm, since they represent a change in the way of producing goods in the manufacturing industry; subsequently, he has focused on the analysis of large volumes of data, specifically on Apache Hadoop technology for big data management, as well as its supporting software projects; this in order to design a technological strategy that allows to prepare medium-sized companies in new innovative technologies that will help them to be included in the new trends of information technology.

As a first result, a roadmap for the installation and configuration of Hadoop software running on a Linux virtual machine has been obtained, as well as the proposal of the technological strategy whose main components are: analysis of the technological architecture, selection of processes or data to be analyzed and installation of Hadoop, among others.

Keywords: Technological strategy, big data, Hadoop

Introduction. Technologies such as the internet of things, cloud computing, big data, artificial intelligence and 3D printing, among others; they reinforce the importance of the manufacturing industry through the manufacture of personalized and intelligent products. Data analysis, information sharing and real-time decision making have a positive impact on the efficiency of the entire value chain [1].

Technologies such as cloud computing, IoT and big data, among others, further reduce coordination costs. Therefore, other factors linked to competitiveness, such as infrastructure, logistics and the digital connectivity system, the cost of energy and the talent of people in accordance with the requirements of Industry 4.0, once again occupy a important place in the location decisions of global companies.

Four main effects on business across industries have been identified: customer expectations are changing, products are being enhanced by data, new forms of collaboration between businesses, and operating models are being transformed into digital models [2]. Due to the above, it is necessary to create new technological strategies for SMEs that allow them to investigate and assimilate new technologies based on Industry 4.0 to improve competitiveness and productivity.

Fundamental Concepts

The term Industry 4.0 refers to a new model of organization and control of the value chain, through the product life cycle and throughout the manufacturing systems supported by information technologies, it is also called "factory". intelligent" or "industrial internet" [3]; The technologies that support this term are known as pillars of industry 4.0, among which are: Simulation, additive manufacturing, integration systems, cybersecurity, augmented reality, cloud computing robotization, industrial internet of things, and big data and data analysis, among others.

Big data refers to data characterized by its volume (large amount), speed (at which it is generated, accessed, processed, and analyzed), and a variety of structured and unstructured data [4].

This data can be reported by machines and equipment, sensors, cameras, microphones, mobile phones, production software, and can come from various sources, such as companies,

suppliers, customers and social networks. The analysis of this data through advanced algorithms is key to making decisions in real time, allowing better quality standards for products and processes to be achieved, and facilitating access to new markets. Big data analytics plays a fundamental role in the decision-making process. Another use of this tool is to control and improve business and manufacturing planning. these data can provide information about hidden patterns, trends, associations, especially for human decision making; The term includes three concepts: volume, speed and variety [5].

Various studies, including IBM, have analyzed the large number of big data applications, the scope of this technology is very wide, however, the analysis carried out by IBM shows the 5 preferred orientations when applying big data. data in organizations where 49% of organizations prefer to apply it to customer centricity, 18% to operational optimization, 15% to financial and risk management, 14% to the new business model, and 4% to business collaboration [6].

Due to the above analyzed, a strategy is designed to be considered by manufacturing companies, highlighting that certain authors propose the use of an intensive data management platform such as Hadoop, which is a framework that supports applications distributed under a free license [7].

Hadoop is an open source software framework that supports data-intensive distributed storage and distributed processing of very large data sets across clusters of computers; Apache Hadoop base is made up of several modules like: Apache Hadoop MapReduce application tool for programming aspect and Hadoop Distributed File System (HDFS) for infrastructure management, Fig. 1 shows the components of the framework .

The components are: Name Node: Main node or main node of the cluster, contains the metadata for HFDS during the processing of the data that is distributed among the nodes. Data Node: These are the systems in the cluster that store the actual HDFS data blocks, these blocks are replicated across multiple nodes to provide high quality solutions. Job Tracker: A service running on the Name node that manages MapReduce jobs and individual dispatched tasks. Task Tracker: Service running on the data nodes, which monitors the individual MapReduce tasks that are submitted.

There are support projects for Hadoop, which have different roles in systems

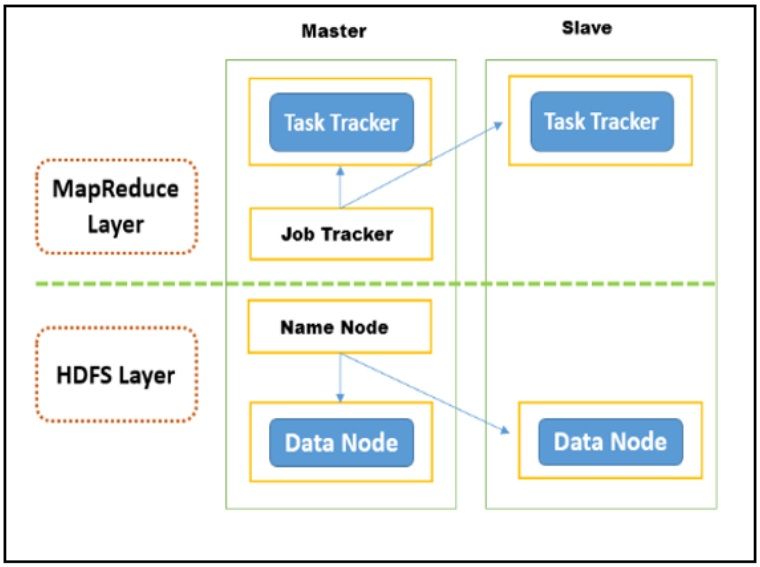

Figure 1. Hadoop components

Strategy

The strategy is composed of 5 complex parts that involve different activities in each one. The first part refers to the analysis of the hardware technology that is required for the installation of the software and the data to be analyzed; a data server with state-of-the-art memory and storage capacity is recommended, as well as the computers that will be the client machines.

The second part refers to the selection of company processes that will be analyzed, they can be customer sales processes, production data, equipment failures, etc. From these selected processes, the necessary information and data is collected, which will be the raw material for the extraction, transformation and loading (ETL) activities.

Subsequently, the strategy focuses on the Hadoop distributed processing platform, on this platform the data will be processed. Emphasizing that the Apache server and later Hadoop must be installed and configured; There are different components of this platform, among which Hive and Sqoop stand out, for the connector between the platform and the MS SQL Server database, which is where the data resides.

The next activity deals with the ETL activities which will be handled by the MS SQL Integration Services software, a data package will be developed with the Hive ODBC driver and the data model with Analysis services.

Once the activities of components 1 to 4 have been carried out, the next activity deals with the analysis of data and visualization of the results through Excell's Power Pivot and Power View software.

This strategy is currently being developed by computer systems engineering students and is planned to be applied to a medium-sized manufacturing company using customer sales data. Fig. 2 shows the proposed strategy.

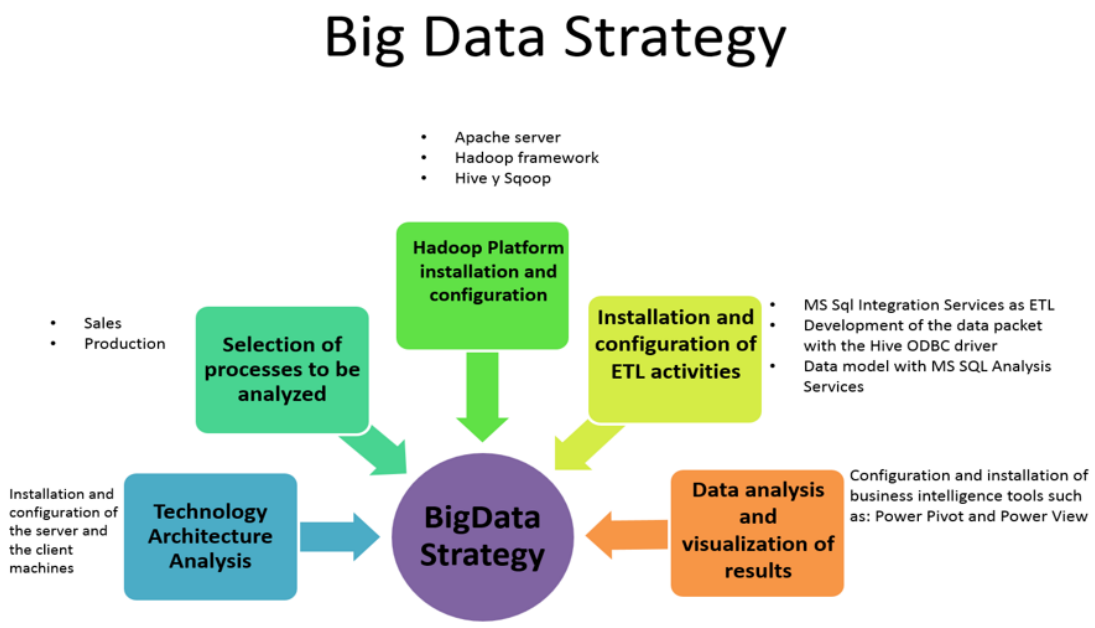

Figure 2. Proposal strategy for big data

Methodology

The phases of the methodology were carried out according to the activities proposed in the strategy, these being:

• Analysis of the technological architecture: In this phase, the server for big data and the client machines are installed and configured.

• Selection of processes to be analyzed: In this phase, the company's data is collected that can be analyzed with big data, which can be structured or unstructured data.

• Installation and configuration of the Hadoop platform: This phase has been the one that has consumed the most time and resources since it is required to install the Linux operating system as a virtual machine using Centos Red Hat, virtualization of each network node, installation and configuration of Hive , Hbase, and Sqoop as part of the software projects that support Hadoop.

• Installation and configuration of the activities of Extraction, Transformation and Loading (ETL) of the data through a JDBC and ODBC driver.

• Data analysis and visualization of results: This last phase of the project is still under development.

Each of the phases is a sequence of the previous one, so the activities of each phase were carried out in the proposed order.

Results

The results obtained from this project have been the following:

• Training in the handling of the Linux operating system, since all the support software, as well as Hadoop work in the Linux environment, installation and configuration of Linux on the Proliant Gen 10th server.

• Installation and configuration of Hadoop, with the Linux wget command and configuration of the environment variables associated with Hadoop.

• Installation and configuration of Hive, Hbase and Sqoop; At this point, each software has a different function and configuration, as well as the configuration of the environment variables for each type of software.

• Tests with the entire environment installed and configured with the server and 3 nodes.

• Carrying out tests with real data from a manufacturing company in the Central Region of Coahuila, Mexico, dedicated to the manufacture of seats for the automotive industry; specifically, on item inventory data.

Conclusion

• The current needs of the manufacturing industry are increasingly influenced by the adoption of new technologies based on Industry 4.0, which will allow them to improve the processes and products they manufacture.

• One of the great needs of this industry is to have trained personnel who can design and implement customized solutions based on the new Industry 4.0 technologies.

• SMEs also face an investment in hardware and software equipment that allow them to implement new technologies, which represents an extra expense in operating costs.

• It is expected that in the coming years this technology will be more accessible to SMEs and there will be solutions focused on the main processes of SMEs.

• The challenge is to achieve a roadmap with more detailed activities, especially in the technical aspect of the installation and configuration of Hadoop and its support software projects to achieve effectiveness in the analysis of company data, this project is still under development, here the progress made to date has been presented.

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ON THE QUESTION OF THE PROCESSING OF MAZUT AT OIL REFINERY

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Abstract. The presented article shows the results in the field of appropriate use of heavy oil residues in the petrochemical and oil refining industries. The significance of the processes of processing heavy oil residues for the national economy is shown. The main directions of fuel oil processing and areas of application of products of its processing are noted.

Keywords: heavy oil residues, fuel oil, hydrocracking, vibration cracking, oil refining

The main part of the extracted natural materials during subsequent processing ends up in production waste. Utilization of waste and by-products of production provides direct cost savings for the increase in primary raw materials, expanding the possibility of exporting (reducing imports) of natural raw materials. A feature of the modern oil refining industry is the tendency to deepen oil refining, which is explained by the limited reserves of oil, as well as the tightening of environmental requirements for oil products [1]. An increase in the depth of oil refining in order to obtain an additional amount of light fractions compared to the potential is achieved by introducing secondary processes for processing heavy oil fractions (thermocracking, catalytic cracking, hydrocracking, etc.) into the refinery scheme. These processes have been introduced and actively used at oil refineries in the advanced countries of the world. However, the problem of recycling the heaviest products (tar, heavy catalytic gas oils, etc.) remaining after primary and secondary processes remains. Their traditional processing into boiler fuel is rapidly losing its relevance due to the widespread gasification of power plants. Another relatively large consumer of heavy oil residues - bitumen production - is characterized by a seasonal mode of operation, which also does not allow to solve the indicated problem sufficiently.

In connection with the foregoing, increasing the efficiency of processing heavy oil residues into light oil products and raw materials for the main organic and petrochemical synthesis is a very urgent task for the republic and other countries producing and consuming oil products.

The level of development of the enterprise and its product specialization directly determine the range, quality and quantity of oil refining waste. A significant proportion of the entire mass of waste falls on the so-called heavy oil residues - these are, as a rule, oil products that do not find more qualified use than applicating them as a component of boiler fuel or raw materials for its production. Depending on the equipment of the refinery with secondary processes, heavy residues can be fuel oil (residual fraction of atmospheric distillation of oil), tar (bottom product of vacuum distillation of fuel oil), heavy gas oil from catalytic cracking. If there is an oil production plant in the structure, oil residues can also include asphalt formed during tar deasphalting and extracts from the selective purification of oil fractions. If the refinery does not have processes for the specialized processing of these heavy products, they are disposed of as components of boiler fuel

The presence in the nomenclature of marketable products of fuel oil, fully or partially consisting of the residue of atmospheric distillation of oil, indicates a low level of development of the enterprise, poor use of the potential of processed raw materials. It is believed that straight-run fuel oil containing valuable gas oil fractions is much more profitable to process at the enterprise itself to obtain expensive motor fuels and lubricating oils. This approach is especially relevant because the share of heavy oils in world oil refining is constantly increasing.

Tar, asphalt, oil refining extracts are good raw materials for the production of oxidized and compounded bitumens used in the construction of roads, buildings and structures. Therefore, most refineries have bitumen plants in their composition. However, the seasonal demand for bitumen (in countries with a stable snow cover in winter), as well as the formation of tars in quantities exceeding the need for them as a raw material for bitumen production, do not allow solving the problem of recycling oil residues only in this way. Therefore, in parallel, they organize their processing by thermodestructive methods.

There are two approaches to carrying out the process of thermal destruction of heavy oil feedstock:

- deep decomposition with a maximum yield of gases and distillate fractions and a minimum yield of cracking residue; in the limiting case, these are coking processes that maximize the depth of oil refining;

- shallow decomposition in order to obtain low-viscosity boiler fuel without the use of distillate diluents; this process is visbreaking, which partly contributes to the deepening of oil refining.

Of all the varieties of the coking process, delayed coking in unheated chambers is the most widely used in industry. From a technological point of view, this is the simplest and cheapest way of almost residue-free processing of heavy raw materials. In addition to gas, distillate fractions and heavy gas oil, which are valuable raw materials for the production of motor fuels, the product of this process is lumpy coke, which, depending on the quality, can find various applications. High-quality low-sulphur, low-ash needle coke, obtained from pyrolysis tars, catalytic gas oils and some cracked residues, is used in metallurgy as a reducing agent and electrode material. The main mass of coke - the so-called sponge coke, produced from atmospheric and vacuum residues with different characteristics, heavy oils, shale tars, etc. - is not suitable for these purposes. Therefore, the construction and operation of delayed coking units.

Visbreaking, as a method of processing heavy oil residues, is widespread in European countries, where the use of heating oil in thermal power engineering is traditional. A typical visbreaking feedstock - vacuum tars - is subjected to a single thermal cracking under relatively mild conditions.

Fuel oil is a liquid product of dark brown (sometimes black) color, boiling up to 350-360^{0}C. It is a mixture of hydrocarbons (with M_r 400-1000), oil resins (Mr 500-3000-and more), asphaltenes, carbenes, carboids and metal containing organic compounds. . Physico-chemical indices of fuel oil are as follows: viscosity 8-80 mm^2/c (at 100^{0}C), density 0.89-1 g/cm^3 (at 20^{0}C), pour point 10-40^{0}C, amount of sulfur 0.5-3.5% , ash nearly 0.3%, net calorific value 39.4-40.7 MJ/kg. Fuel oil consists of long chain hydrocarbons such as alkanes, cycloalkanes and aromatics. This product belongs to heavy fuels. In fact, it is heavier than diesel fuel and naphtha. The chain length of different types of fuel oil depends on their application and use. For example, diesel fuel oil is composed of hydrocarbons with chains of 10-20 carbon atoms, and as a result it can form one of the following chemical structures: $C_{14}H_{30}$-$C_{15}H_{32}$-$C_{16}H_{34}$-$C_{17}H_{36}$-$C_{18}H_{38}$-$C_{19}H_{40}$-$C_{20}H_{42}$.

Straight-run fuel oil containing valuable gas oil fractions is much more profitable to process at the plant itself to obtain expensive motor fuel and lubricating oils.

Thus, in [2] experimental data on the thermal-oxidative degradation of oil tar and fuel oil (distillation residue) are presented. The experiments were carried out on a pilot plant with a continuous reactor of volume of 1.5 l in temperature interval 430–460°C and pressure 2–6 atm. with air supply to the reactor in the amount of 30–80 l/kg. In these conditions, the yield of light fractions increases significantly (up to 36% for tar and up to 57% for fuel oil) compared with conditions of thermically cracking. The residue of cracking can be used as fuel or asphalt. On the base of yield of received hydrocarbon fractions in relation of various process parameters, a general scheme of thermal-oxidative transformations of raw materials is proposed and a mathematical model is constructed that describes the carried out experiments.

Fuel oil is often applicate in the petrochemical, energy and shipbuilding industries. Application of this type of fuel, has also led to severe international fines, increased costs and

construction corrosion. Moreover, the use of heavy fuel oil with a sulfur content of up to 0.5% in the world as a refined fuel, taking into account all aspects, is more important. There are limited industrial methods for hydrotreating fuel oil (due to the heavy oil fraction and the complexity of the sulfur compounds it contains), the most common of which is hydrogen desulfurization. The purpose of work [3] was to model and economically evaluate a fuel oil hydrotreater with a capacity of 13.75 million barrels per year. The calculation of this process was carried out in the Aspen HYSYS refinery program. This calculation explores the effect of pressure, molar ratio of hydrogen to fuel oil and amount of catalyst for sulfur separation, yield of by-product, net operating costs and alll investment prise. Obtained results established that for the hydrotreating process of this 3.5% sulfur fuel oil, the total capital investment is US$308.9 million, and the net cost of producing refined fuel oil is estimated at US$114.5 million per year.

Patent [4] proposes the method of purification of different heavy oil residues, such as vacuum gasoils, fuel oils and/or dewaxing products applicated later as feedstock for hydrocracking and catalytic cracking, as well as high-quality fuel oils and marine oils. This method involves the separation of polycyclic aromatic hydrocarbons, heteroatomic compounds, resins, asphaltenes and heavy metal compounds. The process consists in the liquid extraction of undesirable components with two solvents incompatible with each other: polar N-methylpyrrolidone contain 3-5% water at 40-60°C and a non-polar fraction of n- or i-undecane, which forms azeotrop mixtures with N-methylpyrrolidone, which have a minimum boiling point (~ 179°C). Molar ratio of non-polar solvent to initial feedstock is (0.4-0.5): 1.

The process of catalytic hydrotreatment of residual gas condensate feedstock is one of the ways to improve the quality and expand the range of enterprise products [5]. The hydrocatalytic technology for processing high-sulphur fuel oil includes a heat treatment process where hydrogen acts as a reactant under high pressure in the presence of catalysts, which reduces the concentration of impurities (metals, sulfur and nitrogen compounds) in the product. The article proposes and substantiates the principles of operation of the catalytic hydrogenation of fuel oil at the Astrakhan gas processing plant, as well as the main technological parameters of the process. A preliminary economic assessment of the qualified processing of 500 tons/year of fuel oil was carried out. To develop a technology for the qualified processing of fuel oil, an experimental plant operating under high pressure was created. The volume of the main parameters of experimental studies is determined. The processing of Astrakhan fuel oil using a catalytic hydrogenation process makes it possible to obtain a high-quality oil product with a sulfur content of less than 1% by weight. The use of hydrogenate is possible as a component of marine fuel, as it helps to reduce the burden on the environment from combustion emissions.

Very low sulfur fuel oil is generally obtained from the lowest sulfur raw materials. Mazut brand fuel oil-100 has the following properties: density 870-1000 kg/m^3 at 20°C; calorific value 38-42 MJ/kg (9,100-10,000 kcal/kg); viscosity: 5-15° at 50°C; surface tension 0.03-0.04 J/m^2 (30-40 erg/cm^2) at 40°C; heat of vaporization 170-210 kJ/kg (40-50 kcal/kg); amount of sulfur 0.8-3.5%; amount of resin up to 60%; ash 0.1-0.5%. Fuel oil applicated as fuel in gas turbines must have the lowest ash content

Other fuel oil grades are: CST 180 fuel oil, CST 380 fuel oil. Specifications of CST-180 fuel oil: kinematic viscosity at 50°C (max.) 180-230; pour point (max.) °C 5.0-15.0; flash point (min.) °C 63 total sulfur (max.),% by mass 3.0; carbon residue according to Conradson (max.),% by weight 13; ash (max.) % mass 0.05; water and sediment (max.) % vol. 0.5-0.5 Specifications of fuel oil CST 380: specific gravity at 15°C (kg/m^3) 991; flash point (°C) 60; kinematic viscosity at 100°C (mm^2/s) 35; kinematic viscosity at 50°C (cSt) 380; % water (vol.) 3733; ash % 15.

The paper [6] shows the main results of fuel oil hydrocracking at reduced pressure in the presence of a suspended catalyst. The effect of temperature on the course of the process has been studied. The process of fuel oil hydrocracking has been studied. It was found that when the temperature rises from 400°C to 440°C (pressure 1.0 MPa), the yield of light oil products increases from 29 to 61% by weight.

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DEVELOPMENT AND VALIDATION OF HPLC METHODS FOR QUANTITATIVE DETERMINATION OF BIOLOGICALY ACTIVE SUBSTANCES IN EXTRACTS OF *ECHINACEA PURPUREA* AND *ONOPORDUM ACANTHIUM*

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Introduction *Echinacea purpurea* and *Onopordum acanthium* belong to the family of Asteraceae (Compositae) and are among the most widely used medicinal plant species in traditional medicine. *Echinacea purpurea* possesses its healing effect due to its high content of derivatives of caffeic acid, alkylamides and polysaccharides. The ones of *Onopordum acanthium* is associated with apigenin, quercetin, scotelarin, lignans, coumarins and terpenes and sterols. The presence of these biologically active substances determines the antioxidant, anti-inflammatory, antiviral, antibacterial and antitumor effects of these plants.

Aim The purpose of this study is to create a HPLC methods for quantitative determination of biologically active substances in extracts of *Echinacea purpurea* and *Onopordum acanthium*.

Materials and methods Methanol, acetonitrile HPLC gradient grade. Standarts of phenolic acids (caffeic, chlorogenic, caftaric, chicoric), flavonoids (apigenin, cynarin, quercetin, echinacoside) and lignans (arctigenin).

Results Two fast, convenient and reliable HPLC methods were created for determination of echinacoside, carfatic, caffeic and chicoric acids, cynarin, quercetin and apigenin in *Echinacea purpurea* – **Method 1** (Table 1) as well as chlorogenic and caffeic acids, scutelarin, apigenin and arctigenin in *Onopordum acanthium* – **Method 2** (Table 2). For this purpose high-performance liquid chromatograph with diode-array detector were used. Considering the structure of the analyzed substances, Hitachi C18 AQ column was used as well suitable combinations of solvents to provide optimal separation of the sought compounds. For **Method 1** the solvent system included H_2O (A) with pH 3.0 and acetonitrile (B) in gradient condition from 0-15 min 80A/20B; 15 min 10A/90B; 17 min 80A/20B. The flow rate was 0.9 ml/min and detection at 330 nm for fenolic acids and flavonoids.

Table 1. Parameters of calibration curves for Method 1

Analyte	λ (nm)	Concentrations (μg/ml)						RT (min)	Regression equations	r^2
		S_1	S_2	S_3	S_4	S_5	S_6			
Echinacoside	330	5	10	15	20	25	30	4.95	y=6.9251e+004x	0.9975
Cafratic acid	330	5	10	15	20	25	30	5.68	y=5.3147e+005x	0.9995
Cynarin	330	5	10	15	20	25	30	6.26	y=3.4593e+005x	0.9973
Caffeic acid	330	5	10	15	20	25	30	6.77	y=8.5994e+005x	0.9980
Chicoric acid	330	5	10	15	20	25	30	8.73	y=6.4960e+005x	0.9994
Quercetin	330	5	10	15	20	25	30	10.45	y=4.4909e+005x	0.9990
Apigenin	330	5	10	15	20	25	30	11.57	y=7.4460e+005x	0.9984

Table 2.Parameters related to precision and accuracy for HPLC Method 1 validation

Analyte / Parameters	RSD (%) ±0.1	Real concentration (μg/ml)	Concentration found (μg/ml)	Recovery (%) ±0.1
Echinacoside	5.6	7	7.20	102.9
Cafratic acid	1.8	12	11.94	99.5
Cynarin	5.5	7	6.98	99.7
Caffeic acid	2.8	7	7.03	100.5
Chicoric acid	2.8	25	24.86	99.5
Quercetin	2.8	7	7.10	101.5
Apigenin	2.5	7	6.70	95.7

For **Method 2** the solvent system was H_2O (A) with pH 3 and 40 acetonitrile / 60 methanol (B) in gradient condition from 0-9 min 80A/20B – 50A/50B; 9-26 min - 50A/50B – 10A/90B; 26-28 min 10A/90B; 28-30 min 10A/90B - 80A/20B, flow rate – 1 ml/min and detection at 275 nm for arctigenin, 330 nm for fenolic acids and flavonoids.

Table 3. Parameters of calibration curves for Method 2

Analyte	λ (nm)	Concentrations (μg/ml)						RT (min)	Regression equations	r^2
		S_1	S_2	S_3	S_4	S_5	S_6			
Chorogenic acid	330	5	10	15	20	25	30	9.25	y=5.2820e+005x	0.9968
Caffeic acid	330	5	10	15	20	25	30	11.00	y=1.0046e+006x	0.9966
Scutelarin	330	5	10	15	20	25	30	14.11	y=8.3621e+005x	0.9988
Quercetin	330	5	10	15	20	25	30	18.68	y=4.2348e+005x	0.9993
Arctigenin	275	5	10	15	20	25	30	20.30	y=1.6224e+005x	0.9986
Apigenin	330	5	10	15	20	25	30	21.19	y=6.0410e+005x	0.9993

Table 4. Parameters related to precision and accuracy for HPLC Method 2 validation

Analyte / Parameters	RSD (%) ±0.1	Real concentration (μg/ml)	Concentration found (μg/ml)	Recovery (%) ±0.1
Chorogenic acid	6.7	18	17.74	98.6
Caffeic acid	3.3	18	18.25	101.4
Scutelarin	7.7	12	11.96	99.7
Quercetin	6.0	12	11.99	100.5
Arctigenin	5.9	12	12.25	99.9
Apigenin	7.5	12	11.90	99.2

During the expiriment it was established that in the chosen concentration ranges (Table 1 and Table 3, columns 3), there is a linear relationship between the concentration (x) and area (y) of the chromatographic peak (r^2 =0.9966÷0.9995). This indicates that the mentioned methods can be used for quantification of the test substances. The coefficients of variation between 1.8% and 7.7% and recoveries between 95.7% and 102.9% are indicators of accuracy and precise of the developed methods (Table 2 and Table 4).

Conclusion The proposed HPLC methods proved to be efficient, precise and accurate for quantification of caffeic, chlorogenic, caftaric and chicoric acids, apigenin, scutelarin, cynarin, quercetin and arctigenin in plant material, extracts and food supliments. The equipment used is available, the analysis is short and therefore the methods can be used for routine work. Through them the quality of drugs can be controlled, as well as ready phytomedication.

АВТОМАТИЗАЦИЯ РАСЧЕТОВ МОЩНОСТИ ВЕТРОГЕНЕРАТОРА

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При установке, наладке и обслуживании оборудования ветрогенераторов (ВГ), как правило, теряется львиная доля потенциально выработанной энергии, рабочего времени и других ресурсов, причем значительная часть времени затрачивается на расчеты [1-5]. Современный уровень вычислительной и электронно-измерительной техники позволяет автоматизировать расчеты за счет компьютерной обработки экспериментальных данных.

В рамках запланированных мероприятий согласно концепции перехода к «зеленой экономике» доля возобновляемых источников (ВИЭ) в энергобалансе Казахстана в 2020 году достигла 3%. По данным Минэнерго РК общий объем генерации электроэнергии за счет ВИЭ составил 3.2 млрд кВт*ч, причем на ветроэнергетику (ВЭ) приходится 1% [6]. Незначительный рост объектов ВЭ обусловлен причинами, среди которых помимо необходимости достаточно больших финансовых затрат на создание ветро-электростанций, интегрирование вырабатываемой энергии в централизованную электросеть и др., имеется ряд объективных факторов, связанных как с особенностями процесса выработки энергии за счет преобразования энергии ветра, так и непосредственно с изменчивостью параметров естественного ветра в разные сезоны года и течение суток [3, 4].

Сила и направление ветра в различных зонах хаотично изменяются в зависимости от h-высоты над поверхностью Земли. Так, на экваторе близко к земной поверхности располагается зона с относительно небольшими и переменными по направлению скоростями ветра, а в верхних слоях возни-кают достаточно большие по скорости воздушные потоки в восточном направлении. На высоте от 1 до 4 км от поверхности Земли, в зоне между 30° северной и южной широт образуются достаточно равномерные атмосферные течения, называемые пассатами [2]. На территории Республики Казахстан имеется множество видов рельефа и в зависимости от этого среднегодовая скорость ветра на территории страны колеблется от 0.7 м/с Алматы до 3.7 м/с в Актау [7].

Ветроэнергетические установки (ВЭУ) обычно используют ветер в приземном слое атмосферы на высоте до 50-80 м, реже до 100 м от поверхности Земли. Поэтому наибольший интерес представляют характеристики движения воздушных потоков именно в приземном слое. ВЭУ желательно устанавливать на расстоянии не менее 25-30 м от жилых построек, наиболее подходящим является участок с открытым ландшафтом и минимальным количеством преград для ветра в виде больших деревьев, высоких зданий и т.д.

Естественно, важнейшей характеристикой ветра, является его скорость, хотя необходимо учитывать также изменение влажности воздуха, давления и др. Также принимается во внимание вертикальный профиль ветра, т.е. характер изменения скорости по высоте приземного слоя. Влияние земной поверхности на скорость и направление ветра уменьшается по мере увеличения высоты, скорость обычно возрастает, а порывистость и ускорение ветрового потока снижаются [1-3]. Градиент скоростей летом, как правило, меньше, чем зимой. При адиабатическом градиенте температуры в нижних слоях атмосферы вертикальный профиль ветра v (К) аппроксимируется зависимостями вида

$$v = v_i (h / h_1)^{1/5},$$

где v_i - измеренная в определенный час скорость; h- высота приземистого слоя; h_i- высота нижних слоев атмосферы.

Рассмотрим жестко - лопастной ВГ с горизонтальной осью вращения, состоящий из трех лопастей с радиусом ротора 5м, установленный на мачте высотой 25м, с одноступенчатым редуктором цилиндрического или конического типа и электронно-цифровым анемометром для измерения скорости ветра. Мощность ветрового потока можно вычислить по формуле:

$$P = V^3 \rho S, \quad (1)$$

где V – скорость ветра, м/с; ρ – плотность воздуха, кг/м^3; S – площадь воздействия воздушного потока, м^2.

Величина площади S определяется ометаемой площадью поверхности ветроколеса, т.е. площадью воздействия ветрового потока. При угле атаки α = 90º, при котором направление ветра перпендикулярно поверхности ветроколеса, S= $\pi \times R^2$. Во всех остальных случаях S определяется площадью миделевого сечения ветроколеса, т.е. наибольшей площадью поверхности ветроколеса в направлении, перпендикулярном направлению ветра: S= $\pi \times R^2 \times \cos\alpha$.

Из (1) видно, что величина мощности возрастает в кубическом соотношении с увеличением скорости ветра, т.е. если скорость ветра увеличится в 2 раза, то кинетическая энергия, вырабатываемая ротором, увеличится в 8 раз, т.е скорость ветра является самым важным фактором, влияющим на мощность ВГ.

В связи с технологическими особенностями ВГ в расчетах мощности необходимо учитывать кпд редуктора, механизма по передаче мощности вращения ветроколеса [3, 4, 6]. Главной функцией редуктора является редукция - снижение усилия, необходимого для привода устройства, преобразующего энергию ветрового потока в полезную работу вращения ветроколеса. Обязательным компонентом ВГ является также генератор, устройство для преобразования механической энергии в электрическую. С учетом перечисленных факторов расчет мощности ВГ производится по более уточненной формуле:

$$P = 0.5\xi\pi R^2 V^3 \rho \eta_р \eta_г, \quad (2)$$

где ξ - коэффициент использования энергии ветра (в номинальном режиме для быстроходных ветряков достигает максимума ξmax = 0.4 ÷ 0.5); R - радиус ротора, м; $\eta_р$ – кпд редуктора, %; $\eta_г$ – кпд генератора, %.

На компьютер с анемометра на передаются мгновенные значения скорости ветра, вычисляется средне - часовые или средне – суточные значения $V_{ср}$, по которым определяется мощность ВГ. Разработанный алгоритм расчета по формуле (2) размещен в интернет ресурсе с доменом https://buketovuniversity.github.io/. В качестве примера введем следующие значения: ξ = 0,4; R = 5 м; V = 3 м/с; ρ = 1,25 кг/м^3; $\eta_р$ = 0.91; $\eta_г$ = 0.87. Согласно алгоритму расчета практически моментально получаем результат: $P = 419.71$Вт.

Одновременно определяется мощность вырабатываемой электрической энергии по значениям тока и напряжения, что позволяет определить кпд ВГ. Автоматизация расчетов с обработкой показателей измерительных приборов обеспечивает высокую точность и экономию времени. Кроме того, автоматизация вычислительного процесса исключает монотонность труда, снижающую работоспособность человека на 30%, и не допускает возможные механические ошибки, обусловленные человеческим фактором.

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ТЕНДЕНЦИИ ПРОЕКТИРОВАНИЯ МНОГОФУНКЦИОНАЛЬНЫХ ЖИЛЫХ КОМПЛЕКСОВ

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Эволюционная модель развития жилой среды показывает стремление жилой структуры к самостоятельности, путем повышения уровня многофункциональности, что приводит к увеличению плотности населения комплекса, и уменьшению зависимости от городских структур. Также, в результате анализа эволюции жилой среды установлено, что любые изменения в жилой структуре связаны с социально-экономическими условиями в определенный период. Именно эти условия оказывают постоянное влияние и ставят задачи научно-техническому, градостроительному и экологическому факторам. Условия городского планирования оправдывают увеличение этажности, если речь идет о небольшой строительной площадке в существующей городской структуре. [1]

В условиях застройки города Нур - Султан, где вокруг города много пустующих земель, увеличение этажности жилых комплексов на новых территориях социально несколько неоправданно. Однако, в условиях стремительно развивающейся глобализации, развития строительных технологий и науки в строительстве жилых, общественных и административных зданий, Казахстан следует современным архитектурным тенденциям.

Экономия городских территорий и резкий рост городского населения в постиндустриальный период привел к увеличению плотности населения в жилой структуре за счет увеличения этажности жилого комплекса, в котором спектр услуг стремительно расширяется. По мере развития офисно-деловой сферы занятости населения деловая часть интегрируется в общественно-жилую структуру, образуя многофункциональный жилой комплекс. В результате увеличения территории города образуются субцентры городской системы, рассчитанные на самостоятельное существование. [2]

Сегодня, многофункциональный жилой комплекс – это комбинированный жилой комплекс, в состав которого входят разные по функциональному назначению элементы, связанные единой архитектурно - планировочной концепцией. При этом, характеристики многофункционального жилого комплекса зависят от градостроительного развития региона и социально-общественной необходимости для данного района.

Существующий сегодня в Северном Казахстане опыт проектирования и строительства многофункциональных жилых комплексов свидетельствует о том, что пока еще не вполне образовалось представление о структуре такого сложного градостроительного комплекса, существует необходимость исследования взаимосвязи различных элементов комплекса и их воздействие на формирование структуры многофункционального жилого комплекса, как градообразующего элемента.

В результате анализа эволюции жилой среды установлено, что любые изменения в жилой структуре связаны с социально-экономическими условиями в определенный период. Именно эти условия оказывают постоянное влияние и ставят задачи научно-техническому, градостроительному и экологическому факторам. При проектировании многофункциональных жилых комплексов необходимо учитывать все вышеперечисленные факторы, выявить основные функции, установить задачи, и на основе полученных данных формулировать решение. Все требования имеют тесную связь между собой и только их комплексное решение обеспечивает создание комфортной жилой среды. [3, 4]

Эффективное решение проблемы формирования архитектурно-планировочной структуры жилой среды и ее развитие возможно при применении системного метода. В связи

с тем, что многофункциональный жилой комплекс является сложной, динамичной, постоянно развивающейся и изменяющейся социальной системой, все элементы в нем находятся в постоянном взаимодействии и взаимосвязи. [4]

Изучив все аспекты формирования многофункциональных жилых комплексов, можно понять, что с течением времени сложился определенный образ формирования подобных зданий. Однако, в современное время, в связи со стремительным развитием научно-технического прогресса, а также учитывая другие факторы, оказывающие влияние на проектирование, можно сделать вывод, что данный образ требует пересмотра в пользу использования современных решений в проектировании и строительстве.

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ИЕРАРХИЧЕСКАЯ СТРУКТУРА ПРОЦЕССОВ ПОДГОТОВКИ НЕФТИ

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Аннотация: В статье проведен системный анализ процессов разделения эмульсий, представляющих собой сложные взаимосвязанные системы различных физико-химических эффектов, позволяющие выполнить задачи исследования и расчета отдельных технологических процессов, моделирования и оптимизации сложных технологических систем, оптимального проектирования химико-технологических комплексов для создания высокоэффективного химического производства.

Ключевые слова: Процесс подготовки нефти, нефтяная эмульсия, деэмульгатор, иерархическая структура

Процессы подготовки нефти играют важную роль для производств, осуществляющих дальнейшую ее переработку. В связи с этим, системный анализ данного процесса, представляющий собой сложную взаимосвязанную систему различных физико-химических эффектов, позволяет задачи исследования и расчета отдельных технологических процессов, моделировании и оптимизации сложных технологических систем, оптимального проектирования химико-технологических комплексов подчинить общей стратегии и единой цели: созданию высокоэффективного химического производства; современное производство состоит из большого количества взаимосвязанных подсистем, между которыми существуют отношения подчиненности в виде иерархической структуры с тремя основными ступенями [3, 5].

Первую, низкую ступень образуют типовые процессы химической технологии и локальные системы управления. В частности для процессов разделения нефтяной эмульсии это химические, механические и гидродинамические процессы и аппараты (блок дозирования химреагента, отстойники, насосы), тепловые процессы (теплообменники, трубчатые печи). Основу второй ступени иерархии составляют производственные цеха и системы управления цехами. Основу третьей, высшей ступени иерархической структуры составляют системы оперативного управлении совокупностью цехов, системы организации и планирования запасов сырья и реализации готовых продуктов.

Для эффективного решения задач второго и третьего уровней необходим адекватный анализ физико-химических явлений, протекающих в технологических аппаратах первой ступени. Одним из основных аппаратов и процессов низшей ступени являются отстойники и процессы разделения нефтяных эмульсий.

Системный анализ процессов разделения эмульсий можно разбить на следующие этапы:

1 - моделирование кинетики процесса выделения жидкой фазы с участием деэмульгатора или других компонентов.

2 - моделирование процесса, протекающего в объеме единичной капли.

3 - Моделирование процесса взаимодействия капель в результате их взаимного столкновения во внешнем поле, приводящего к коалесценции (слияние) и дроблению капель под действием электрических сил притяжения и отталкивания.

4 - моделирование аппарата в целом, учитывающее распределение частиц по размерам (уравнение коагуляции и дробления), гидродинамическую структуру потока, тепловое поле, наличие промежуточного слоя, реологию и физико-химические свойства потоков, фазовые переходы осаждение капель и расслоение фаз, конструктивные особенности.

5 - моделирование и расчет системы последовательно-параллельно соединенных аппаратов, учитывающее связи между ними посредством материальных и тепловых потоков.

Подобный анализ позволяет построить более полные математические модели системы электроотстойников, необходимых для инженерных расчетов и оптимизации.

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КОРРЕКТНАЯ РАЗРЕШИМОСТЬ ОДНОЙ ЛИНЕЙНОЙ НЕЛОКАЛЬНОЙ ГИПЕРБОЛИЧЕСКОЙ ЗАДАЧИ ВТОРОГО ПОРЯДКА

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В работе исследуется следующая нелокальная краевая задача

$$(V_{1,1}z)(t,x)\equiv z_{tx}(t,x)+z_t(t,x)A_{1,0}(t,x)+z_x(t,x)A_{0,1}(t,x)+$$
$$+z(t,x)A_{0,0}(t,x)=g_3(t,x),\quad (t,x)\in D=T\times X,\quad T=[t_0,t_1],\ X=[x_0,x_1], \tag{1}$$

$$(V_{1,0}z)(t)\equiv z_t(t,x_0)+\int_{x_0}^{x_1} z_\xi(t,\xi)K(t,\xi)d\xi=g_2(t),\ t\in T, \tag{2}$$

$$(V_{0,1}z)(x)\equiv z_x(t_0,x)=g_1(x),\ x\in X, \tag{3}$$

$$V_{0,0}z\equiv z(t_0,x_0)=g_0. \tag{4}$$

Здесь: $A_{0,0}(t,x),\ A_{1,0}(t,x),\ A_{0,1}(t,x)$ – заданные $n\times n$ - матрицы, причем $A_{0,0}\in L_{p,n\times n}(D)$, т.е. с элементами из $L_p(D),\ 1\le p\le\infty,\ A_{0,1}(t,\cdot)\in L_{\infty,n\times n}(X),\ A_{1,0}(t,\cdot)\in L_{p,n\times n}(X)$ почти для всех $t\in T$ и $A_{0,1}(\cdot,x)\in L_{p,n\times n}(T),\ A_{1,0}(\cdot,x)\in L_{\infty,n\times n}(T)$ почти для всех $x\in X$; $K(t,\xi)$ – заданная $n\times n$ - матрица, такая, что $K(\cdot,t)\in L_{q,n\times n}(X)$ почти для всех $t\in T$, кроме того, норма $\|K(\cdot,t)\|_{L_{q,n\times n}(X)}$ как функция от $t\in T$ принадлежат пространству $L_p(T)$; $g_3(t,x),\ g_2(t),\ g_1(x),\ g_0$ – заданные строчные n - векторы, причем $g_3\in L_{p,n}(D),\ g_2\in L_{p,n}(T),\ g_1\in L_{p,n}(X)$, т.е., с элементами из $L_p(D),\ L_p(T),\ L_p(X)$, соответственно; $1/p+1/q=1.$

$L_p(D), L_p(T), L_p(X),\ (1\le p<\infty)$ - пространство p -интегрируемых функций на D, T, X соответственно; $L_{p,n}(D), L_{p,n}(T), L_{p,n}(X)$ и $L_{p,n\times n}(D), L_{p,n\times n}(T), L_{p,n\times n}(X)$, соответственно пространства измеримых n -мерных строчных вектор-функций и $n\times n$ - матриц на D, T, X с элементами из $L_p(D), L_p(T), L_p(X)$; $L_{\infty,n\times n}(T), L_{\infty,n\times n}(X)$ - пространства измеримых и существенно ограниченных $n\times n$ – матриц с элементами из $L_p(T), L_p(X)$ соответственно.

При этих условиях решение $z(t,x)$ задачи (1)-(4) разыскивается в пространстве С.Л.Соболева $W_{p,n}(D)=\{z\in L_{p,n}(D): z_t, z_x, z_{tx}\in L_{p,n}(D)\}$ [1]. Иначе говоря, оператор $V=(V_{0,0},V_{0,1},V_{1,0},V_{1,1})$ определен на $W_{p,n}(D)$ и действует в пространстве $\Delta_{p,n}(D)=R^n\times L_{p,n}(X)\times L_{p,n}(T)\times L_{p,n}(D).$

Частные случаи задачи (1)-(4) для гиперболического нагруженного уравнения влагопереноса можно встретить, например, в работах [2 – 4]. В работе используя понятие эквивалентной задачи и изоморфизм между пространствами [5 – 10], осуществляемый специальным оператором $Nz\equiv(z(t_0,x_0), z_x(t_0,\cdot), z_t(\cdot,x_0), z_{tx}(\cdot,\cdot))$, для оператора V самой задачи (1)-(4) получена априорная оценка.

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ИНТЕГРАЛЬНОЕ ПРЕДСТАВЛЕНИЕ РЕШЕНИЯ ОДНОЙ ЛИНЕЙНОЙ НЕЛОКАЛЬНОЙ КРАЕВОЙ ЗАДАЧИ ГИПЕРБОЛИЧЕКОГО УРАВНЕНИЯ ВТОРОГО ПОРЯДКА

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В работе исследуется следующая нелокальная краевая задача

$$(V_{1,1}z)(t,x)\equiv z_{tx}(t,x)+z(t,x)A_0(t,x)+z_x(t,x)A_1(t,x)+z_t(t,x)A_2(t,x)+$$
$$+\int_X z_\xi(h(t,x),\xi)K(\xi;t,x)d\xi=g_3(t.x),\ (t,x)\in D=T\times X,\ T=[t_0,t_1],\ X=[x_0,x_1], \quad (1)$$
$$(V_{1,0}z)(t)\equiv z_t(t,0)=g_2(t),\ t\in T, \quad (2)$$
$$(V_{0,1}z)(x)\equiv z_x(0,x\ )=g_1(x),\ x\in X, \quad (3)$$
$$V_{0,0}z\equiv z(0,0)=g_0. \quad (4)$$

Здесь: $A_0(t,x),\ A_1(t,x),\ A_2(t,x)-$заданные $n\times n$- матрицы, причем $A_0\in L_{p,n\times n}(D)$, т.е. с элементами из $L_p(D),\ 1\le p\le\infty$, $A_1(t,\cdot)\in L_{\infty,n\times n}(X)$, $A_2(t,\cdot)\in L_{p,n\times n}(X)$ почти для всех $t\in T$ и $A_1(\cdot,x)\in L_{p,n\times n}(T)$, $A_2(\cdot,x)\in L_{\infty,n\times n}(T)$ почти для всех $x\in X$; $K(\xi;t,x)$, заданная $n\times n$- матрица, такая, что $K(\cdot,t,x)\in L_{q,n\times n}(X)$, почти для всех $(t,x)\in D$, $q=p/(p-1)$, кроме того, норма $\|K(\cdot,t,x)\|_{L_{q,n\times n}(X)}$ как функция от $(t,x)\in D$ принадлежат пространству $L_p(D)$, $h(t,x)$, - заданная измеримая функция на D, для которых $t_0\le h(t,x)\le t_1$ почти для всех $(t,x)\in D$; $g_3(t,x),\ g_2(t),\ g_1(x),\ g_0-$ заданные строчные n- векторы, причем $g_3\in L_{p,n}(D)$, $g_2\in L_{p,n}(T)$, $g_1\in L_{p,n}(X)$, т.е., с элементами из $L_p(D), L_p(T), L_p(X)$, соответственно;

$L_p(D), L_p(T), L_p(X), (1\le p<\infty)$- пространство p-интегрируемых функций на $D,\ T,\ X$ соответственно; $L_{p,n}(D), L_{p,n}(T), L_{p,n}(X)$ и $L_{p,n\times n}(D), L_{p,n\times n}(T), L_{p,n\times n}(X)$ соответственно пространства измеримых n-мерных строчных вектор-функций и $n\times n$-матриц на D,T,X с элементами из $L_p(D), L_p(T), L_p(X)$; $L_{\infty,n\times n}(T), L_{\infty,n\times n}(X)$ - пространства измеримых и существенно ограниченных $n\times n-$матриц с элементами из $L_p(T), L_p(X)$ соответственно.

При этих условиях на данные задачи (1)-(4) решение $z(t,x)$ разыскивается в пространстве С.Л.Соболева $W_{p,n}(D)=\{z\in L_{p,n}(D): z_t, z_x, z_{tx}\in L_{p,n}(D)\}$ [1]. Иначе говоря, оператор $V=(V_{0,0},V_{0,1},V_{1,0},V_{1,1})$ определен на $W_{p,n}(D)$ и действует в пространстве $\Delta_{p,n}(D)=R^n\times L_{p,n}(X)\times L_{p,n}(T)\times L_{p,n}(D)$.

В работе использован изоморфизм, осуществляемый оператором $Nz\equiv(z(0,0),z_x(0,x),z_t(t,0),z_{tx}(t,x))$ из $W_{p,n}(D)$ в $\Delta_{p,n}(D)=R^n\times L_{p,n}(X)\times L_{p,n}(T)\times L_{p,n}(D)$ [2-4]. На основе этого изоморфизма удалось определить сопряженную задачу в виде интегро-алгебраической системы. С помощью решения сопряженной системы называемой

фундаментальным решением задачи (1)-(4), получено интегральное представление решения этой задачи $[2-6]$.

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ЗБОРИ АВСТРІЙСЬКОГО БОТАНІКА Й.Ф.ФРЕЙНА В ІСТОРИЧНІЙ КОЛЕКЦІЇ Е.Е. ЛІНДЕМАННА ГЕРБАРІЮ ОДЕСЬКОГО НАЦІОНАЛЬНОГО УНІВЕРСИТЕТУ ІМЕНІ І.І. МЕЧНИКОВА (MSUD)

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У великих гербарних колекціях завжди зустрічається багато матеріалів, які були зібрані дослідниками, що зробили великий внесок у пізнання рослинного світу. Імена деяких з них зараз широко відомі, інших – залишилися у минулому, вони не відомі широкому загалу ботаніків, але заслуговують на пам'ять.

Гербарій Одеського національного університету імені І.І. Мечникова (MSUD), занесено до переліку тих об’єктів, що становлять національне надбання України [1, 2]. До його складу входить декілька історичних гербарних колекцій, зокрема, гербарій Е.Е.Ліндеманна [3], у якому представлені збори Й. Ф. Фрейна (Josef Franz Freyn).

Йосип Франц Фрейн (Josef Franz Freyn) (7.12.1845-16.05.1903) був відомим австрійським ботаніком, хоча значну частину життя працював інженером на залізниці. Він народився у Празі, яка тоді належала Австро-Угорщині, і багато уваги приділяв вивченню флори Угорщини, Південної Істрії, а також Далекого Сходу і Центральної Азії. Описав багато насіннєвих рослин, серед яких 13 видів роду *Bunium,* 13 в. *Allium,* 8 в. *Peucedanum,* 6 в. *Achillea,* 5 в. *Anthemis* та багато інших. Особливу увагу приділяв вивченню родини Ranunculaceae.

У таблиці 1, яку складено за номенклатурою XIX ст., представлені його збори 1871-1895 рр., що зберігаються у гербарній колекції Е.Е. Ліндеманна, що є частиною історичного гербарію Одеського національного університету імені І.І. Мечникова (MSUD).

Таблиця 1. Збори Й.Ф. Фрейна в історичній колекції Е.Е.Ліндеманна гербарію Одеського національного університету імені І.І.Мечникова MSUD

N	Родина	Вид	Місце збору	Рік збору
1	Apocynaceae	*Vinca herbacea* Kit.	Sielemburgen	1871
2	Caryophyllaceae	*Arenaria ciliata* L. α *frigida* Koch.	Galizia	1888
3		*A. polygonoides* Wulf.	Tyrol.Alpe	1886
4		*Cerastium alpinum* L.β *lanatum* Fenzl.	Hungaria.Tatra	1888
5		*C. latifolium* L.	Hungaria	1888
6		*C. semidecadendrum* L.	Bohemia.Ping.	1886
7		*Dianthus glacialis* Haenke	Hungaria	1888
8		*D. seguieri* Vill. β Ledeb.	Tirol	16.08.1886
9	Compositae	*Achillea krastliana* Brigg.	Tirol	10.08.1886
10		*A.nana* L.	Lombardia	10.09.1886
11		*Hieracium Tatrae* Griseb.	Galizia. Tatra	12.08.1888

12	Cruciferae	*Draba aizoides* L.	Lombardia	
13		*D. carinthiaca* Hoppe	Lombardia	1886
14		*D. Wahlenbergii* Hortm.	Lombardia	1886
15		*Erysimum crepidifolium* Reichenb.	Bohemia	1890
16		*Hutchinsia alpina* R.Br.	Galizia	1888
17		*Thlaspi praecox* Wulf. β Lindm.	Hungaria. Pest	1890
18	Geraniaceae	*Erodium moschatum* Herit.	Hungaria. Pest	4.06.1873
19	Gramineae	*Melica ciliata* L. *γ transylvanica* Lindm.	Bohemia	24.06.1888
20		*Poa caesia* Sm.	Tyrol. Arter Alpen.	3.08.1896
21	Leguminosae	*Astragalus Hippoglottus* L.	Bohemia	30.05.1886
22		*A.monspessulanum* L.	Transylvania	1872
23		*Medicago orbicularis* All.	Pest	3.05.1873
24		*Orobus luteus* L. γ *laevigatus* Ledb.	Gratz	
25		*Trifolium maritimum* Huds.	Istria	23.07.1875
26		*T. perviflorum* Ehrh.	Transylvania	18.06.1873
27	Liliaceae	*Asparagus acutifolius* L.	Istria	1885
28	Onagraceae	*Epilobium Fleischeri* Hochyl.	Tyrol	27.06.1886
29	Orchidaceae	*Chamacrepis alpina* Spr.	Lombardia	8.08.1886
30	Plantaginaceae	*Plantago lagopus* L.	Istria. Pola	19.05.1895
31	Polygalaceae	*Polygala microcarpa* Gaud.	Helvetia. Engadin	1886
32	Primulaceae	*Androsace obtusifolia* All.	Tyrol. Osler.	3.08.1886
33		*Cyclamen repandum* Sm.	Istria	26.06.1875
34	Saxifragaceae	*Saxifraga hieracifolia* Kit,	Hungaria	1883
35		*S. seguieri* Spr.	Lombardia	1886
36		*Veronica acinifolia* L.	Istria	15.05.1875
37	Violaceae	*Viola canina* L. β *ericetorum* Reichb.	Bohemia	05.1886
38		*V. cenisia* L.	Lombardia	10.10.1886

Всього у таблиці представлено 38 видів та 6 форм, які належать до 27 родів, 15 родин та 2 класів відділу Magnoliophyta. Найкрупнішими є родини Cruciferae (Brassicaceae) (4 р. 7 в.), Caryophyllaceae (3 р. 7 в.), Leguminosae (Fabaceae) (4 р. 6 в.), Compositae (Asteraceae) та Saxifragaceae (по 2 р. 3 в.), Gramineae (Poaceae) і Primulaceae (по 2 р. 2 в.), Violaceae (1 р. 2 в.). Усі інші родини одновидові.

Найкрупнішими є роди *Cerastium* та *Draba,* які мають по 3 види, а *Achillea, Arenaria, Astragalus, Dianthus, Saxifraga, Trifolium, Viola* – по два. Вісімнадцять родів є одновидовими.

Місцями збору були Ломбардія (7 видів, серед яких всі види роду *Draba, Chamacrepis alpina, Achillea nana* та ін.), Угорщина (7 в., серед яких *Cerastium alpinum, C. latifolium ,Thlaspi praecox, Erodium moschatum),* Тироль (6 в., серед яких *Dianthus seguieri, Achillea krastliana, Androsace obtusifolia)*, Істрія (5 в., серед яких *Trifolium maritimum, Asparagus acutifolius, Veronica acinifolia),* Богемія (5 в., серед яких *Cerastium alpinum, Erysimum crepidifolium, Astragalus Hippoglotus*), Галіція (3 в.: *Arenaria ciliata, Hieracium Tatrae, Hutchinsia alpina*, Трансильванія (2 в. *Astragalus monspessulanum, Trifolium perviflorum*), Швейцарія (*Polygala microcarpa)* та ін.

Динаміка збору гербарних зразків по роках: 1871 – 1 гербарний аркуш (г.а.); 1872– 1 г.а.; 1873 – 3 г.а.; 1875 – 3 г.а.; 1883 – 1 г.а.; 1885 – 1 г.а.; 1886–15 г.а.; 1888 – 7 г.а.; 1890 – 2 г.а.; 1895 –1 г.а.; 1896–1 г.а.

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ЗАХИСТ ВІД ФІШИНГОВИХ АТАК ЗА ДОПОМОГОЮ ЕЛЕКТРОННОГО ЦИФРОВОГО ПІДПИСУ

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В час пандемії та розвитку технологій, бізнесу/компанії так як і людям потрібно ставати все більш гнучким і швидко приймати рішення та впроваджувати нові технології. Оскільки зараз укладається партнерство не тільки внутрішньо, але і зовнішньо за межами країни. Отже, щоб укладати договорити чи передавати таємну інформацію використовуються онлайн способи, за часту поштові скриньки. Однак, зловмисники пильно відстежують дії компанії та обмін інформації в ній і за межами неї. Доволі легко в такій ситуації стати жертвою фішингових атак.

Фішингова атака — це будь-яка шахрайська спроба знайти жертв, збиравши особисту інформацію за допомогою оманливих електронних листів і вебсайтів.

Що стосується методів фішингу, існує п’ять поширених типів фішингу:

1. **Spear phishing** – направлена атака на певну людину.
2. **Whaling** – це тип фішингу, спрямований на великих цілей або «китів».
3. **Clone phishing** – це атака, під час якої хакер перехоплює справжнє листування між двома людьми, які можуть добре знати один одного.
4. **Vishing** – це фішинг за допомогою телефонного дзвінка.
5. **Smishing** – це тип онлайн-шахрайства, який відбувається за допомогою текстових повідомлень.

Отже, постає питання як захистити себе і свою компанію від небажаного перехоплення інформації та можливого її поширення. У цьому випадку, для документів та договорів рішенням є електронно цифровий підпис, який захищає та забезпечує юридичну силу даним файлам.

Цифровий підпис – це математичний прийом, який використовується для перевірки автентичності та цілісності повідомлення, програмного забезпечення або цифрового документа. Це цифровий еквівалент рукописного підпису або печатки, але він забезпечує набагато більшу безпеку.

Електронно цифровий підпис забезпечує наступні вимоги:

1. Справжність.
2. Цілісність.
3. Невідмовність.
4. Нотаріальне засвідчення.

Електронні підписи поділяються на три категорії:

- *Простий*. Даний тип підпису не шифрується і є найменш безпечним.
- *Розширений*. Цей тип підпису шифрується ключем, доступним лише для підписувача.
- *Кваліфікований*: Кваліфікований підпис є найбільш безпечним він гарантує, що документ не піддавався ніяким маніпуляціям, оскільки ЦС (центр сертифікації) видав цифровий сертифікат і засвідчив особу підписувача.

Цифрові підписи засновані на криптографії з відкритим ключем (асиметрична криптографія). За допомогою алгоритму відкритого ключа, такого як RSA, генеруються два ключі, створюючи математично пов’язану пару ключів, один особистий і один публічний.

Електронні цифрові підписи використовуються у таких напрямах:

1. Уряд.

2. Охорона здоров'я.
3. Виробництво.
4. Фінансові послуги.
5. Криптовалюти.

Оскільки все більше і більше бізнесу ведеться онлайн, транзакції та угоди, які колись підписувалися на папері та доставлялися фізично, тепер повністю замінені цифровими документами та робочими процесами. Однак, коли поширюється цінна чи конфіденційна інформація, завжди знайдуться зловмисники, які хочуть викрасти або маніпулювати цю інформацію для особистої вигоди. Підприємства повинні мати можливість перевіряти та автентифікувати, що ці критично важливі бізнес-документи, дані та комунікації доставляються надійно та безпечно, щоб зменшити ризик підробки документів зловмисниками.

Окрім захисту цінної онлайн інформації, цифрові підписи не порушують ефективності документообігу в Інтернеті. Насправді вони часто допомагають покращити управління документами для паперових процесів. Завдяки впровадженню цифрового підпису підписати документи легко і можна зробити на будь-якому комп’ютері чи мобільному пристрої.

І, звичайно, дуже важливо, щоб ці угоди з цифровим підписом були визнані з юридичної точки зору. В Україні є дійсним закон "Про електронний цифровий підпис" у якому зазначаються його правовий статус, перевірка на справжність, чинність та особливості застосування.

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ПОЛУЧЕНИЕ СОЛИ АРГИНИНА СУКЦИНАТА

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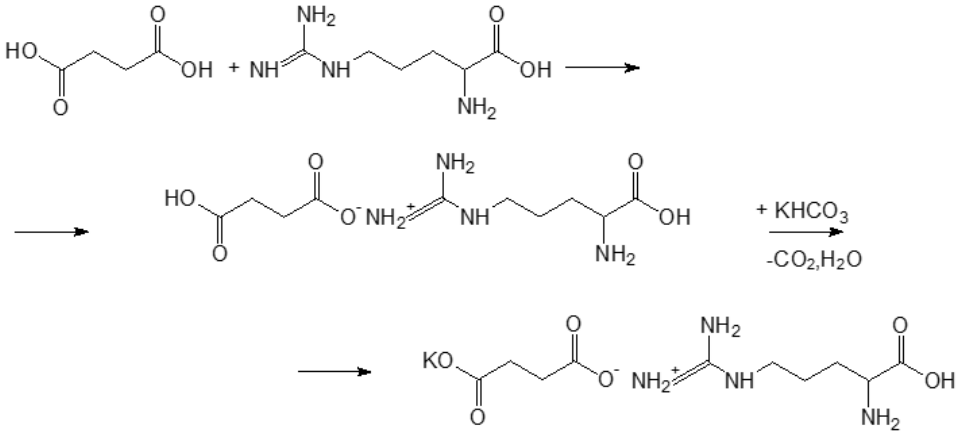
Аминокислота L-аргинин (α-амино-δ-гуанидино-валериановая кислота) активно участвует в функционировании сердечно-сосудистой системы человека, поскольку является предшественником оксида азота (II), образующегося в случае NO-синтазного пути метаболизма [1]. NO – это универсальный регулятор физиологических процессов организма человека, в том числе вазодилатор [2]. Известно, что получение производных биологически активных веществ может потенцировать их активность, в этом плане перспективно получение производных аргинина и янтарной кислоты, которая активно участвует в функционировании сердечно-сосудистой и дыхательной систем организма, являясь продуктом цикла Кребса [3]. Получено дизамещенное производное аргинина и янтарной кислоты, на основании которого разработано и зарегистрировано биологически активное вещество Ника Кардиотон, успешно применяемое для укрепления сердечно-сосудистой системы [4]. Учитывая значительную роль неорганических ионов, в частности ионов калия, в функционировании сердечно-сосудистой системы [5], которые обеспечивают биоэлектрическую активность клеток, формируют клеточный потенциал действия и поддерживают нервно-мышечную возбудимость и проводимость, перспективно получение производного аргинина сукцината в виде калиевой соли.

Целью настоящей работы было разработать пути получения калиевой соли аргинина сукцината.

Первоначально было получено однозамещенное производное янтарной кислоты и аргинина, на второй стадии процесса осуществляли получение калиевой соли аргинина сукцината при взаимодействии с гидрокарбонатом калия согласно схеме (1):

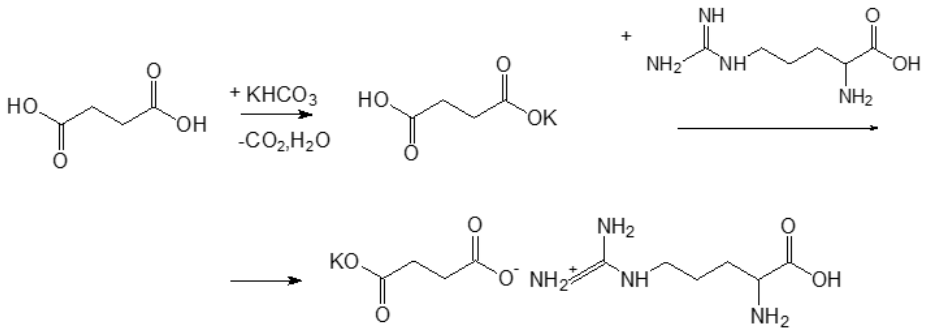


(1)

Выход калиевой соли аргинина сукцината составил 88,9%, получено производное фармакопейной степени чистоты 99,5%. Данные элементного анализа указывают на соответствие состава полученного соединения. Вычислено,%: C 36,36; N 16,97; H 5,76; K 11,82. Найдено,%: C 36,39; N 17,00; H 5,60; K 11,32.

Получение калиевой соли аргинина сукцината было проведено также с использованием в качестве исходного соединения монокалиевой соли янтарной кислоты согласно схеме (2). Выход целевого соединения составил 81,0%, количественное содержание 98,6%. Данные элементного анализа указывают на соответствие состава полученного

соединения. Вычислено,%: C 36,36; N 16,97; H 5,76; K 11,82. Найдено,%: C 36,49; N 16,89; H 5,61; K 11,42.



(2)

С целью подтверждения структуры полученных соединений был проведен их ИК-спектрометрический анализ. ИК-спектры образцов калиевой соли аргинина сукцината, полученной по схеме 1 и 2, идентичны. Основные характеристические полосы приведены в таблице:

Таблица 1. ИК-спектрометрические характеристики ν, см$^{-1}$ аргинина (Arg), янтарной кислоты (SucH), аргинин сукцината (ArgSuc), калия сукцината (KSuc), калиевой соли аргинин сукцината (KArgSuc)

Arg	SucH	ArgSuc	KSuc	KArgSuc
1679 (C=O)	1693	1701	1650	1698
1624 (аминокислотная полоса I)	-	1619	-	1635
1557 (аминокислотная полоса II)	-	1558	-	1560
1331 (C-N)	-	1338	-	1346
2862 (C-H)	2854	2869	2860	2855

Следует отметить, что в ИК-спектре сукцинатов аргинина наблюдается появление уширенной полосы поглощения при 2100 см$^{-1}$, что может свидетельствовать о взаимодействии по гуанидиновой группе.

Таким образом, нами получена и охарактеризована калиевая соль аргинин сукцината, перспективная для использования в качестве биологически активного соединения.

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ВИКОРИСТАННЯ КОМУНІКАТИВНИХ НАВИЧОК В ГАЛУЗІ БЕЗПЕКИ ІНФОРМАЦІЇ

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Усі ми знаємо наскільки важливою є безпека технічних систем в сучасному світі. Більшість наших дій в житті пов'язані зі взаємодією з системами. Наприклад, банківські операції приховують під собою безліч маніпуляцій з нашими даними, які ми не бачимо. Сплата комунальних платежів відбувається шляхом запису даних в базу. Прийшовши до лікаря на огляд в державну лікарню, спеціаліст перевірить чи в системі охорони здоров'я міститься ваша з ним декларація. Наше життя - це постійна взаємодія з технологіями.

Що ж являє собою поняття інформаційної безпеки? Насправді, це не лише захист даних від несанкціонованого доступу. Інформаційна безпека – це в основному практика запобігання використанню, розголошенню, зриву, модифікації, перевірці, запису або знищенню інформації. Вона може бути фізичною або електронною. На зразок наших даних ми можемо сказати, що деяка інформація міститься в профілі у соціальних мережах, в мобільному телефоні, усі ми є власниками біометричних даних тощо. Таким чином, інформаційна безпека охоплює дуже багато областей дослідження, як-от криптографія, комп'ютерний захист, кібер криміналістична експертиза, онлайн-соціальні медіа тощо.

Як і в кожному напрямку, комунікативні навички дозволяють нам вирішити ту, чи іншу проблему, дістати деякі матеріали, дійти до певної мети. Вони є надзвичайно важливими в роботі з командою, адже процес виконання певної задачі потребує терпіння, розуміння один одного. Це особливо критично в тих структурах, де непорозуміння чи вибране неправильне рішення в ході дискусії може бути фатальним для досягнення бажаного результату і навіть призвести до гірших напрямків. Люди повинні думати нестандартно, оскільки перш ніж зламають систему, пройде час, за який можна було б попередити ситуацію шляхом аналізу ризиків та слабких місць.

Іншим важливим моментом є бажання розвиватись та слідкувати за змінами у світі. Кібербезпека - це настільки нестабільний напрямок, де буквально завтра може змінитися підхід до захисту інформаційних активів через нову вразливість. Для того, аби вибирати вдалий підхід до забезпечення безпеки необхідно читати новини, аналізувати зміни в технологіях та йти шляхом оптимального захисту. Критичне мислення дозволяє працівникам відділу кібербезпеки об'єктивно розслідувати кожну подію та знаходити її першопричину. Важливо розуміти помилки та не допускати їх появи знову.

Треба відзначити, що навичка переконувати та доносити свої думки грає вирішальну роль в прийнятті рішень і досягненні результату. Хороший спеціаліст, що розуміється в галузі безпеки має чітко висловлювати свою думку з підтвердженими аргументами для того, аби колеги зрозуміли його погляд і взяли їх до уваги. Необхідно твердо відстоювати позицію, і тільки тоді з нею будуть рахуватись. Позиція лідера - ось що має бути в людини з амбіціями, яка хоче допомогти вирішити наявні задачі. Особливо це стосується комунікації з людьми, які не знають елементарних правил поведінки в інтернеті та спілкування з незнайомцями.

Існує такий термін, як соціальна інженерія. Він використовується для широкого спектру шкідливих дій, що здійснюються через взаємодію людей. В хід йдуть психологічні маніпуляції, щоб обманом змусити користувачів зробити помилки безпеки або розповісти конфіденційну інформацію. Атаки соціальної інженерії відбуваються в один або кілька етапів. Зловмисник спочатку досліджує передбачувану жертву, щоб зібрати необхідну довідкову інформацію, таку як потенційні точки входу та слабкі протоколи безпеки, необхідні для продовження атаки. Потім зловмисник намагається завоювати довіру жертви

та надавати стимули для подальших дій, які порушують методи безпеки, наприклад, розкриття конфіденційної інформації або надання доступу до критичних ресурсів. Соціальні інженери маніпулюють людськими почуттями, такими як цікавість і страх, щоб втілити в життя схеми і залучити жертв у свої пастки. Тому необхідно бути обережними, коли надходять дивні електронні листи, дзвінки з невідомих номерів, або провокуючі питання від незнайомців.

Отже, галузь безпеки інформації - багатогранна. Вона потребує безліч знань і навичок для ефективного захисту систем і комунікації з іншими людьми. Але найбільш важлива умова для досягнення успіху - ефективна комунікація та технічна експертиза, що являється рішучою силою в будь-якій ситуації.

ПЕРСПЕКТИВИ РОЗВИТКУ ГАЛУЗІ СКОТАРСТВА ТА ВИКОРИСТАННЯ ТЕХНОЛОГІЇ НАГУЛУ

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Вступ. В перспективі передбачено забезпечити в нашій країні середньорічне споживання м'яса на душу населення не менше 80 кг. Для цього необхідно перш за все закріпити кормову базу, збільшити поголів'я худоби та вірно організовувати вирощування та відгодівлю молодняка великої рогатої худоби. Важливе значення має інтенсифікація виробництва, перехід галузі на промислову основу. У зв'язку з цим необхідно розробити та запровадити прогресивну технологію вирощування та відгодівлі тварин, в основі якої лежать закономірності формування м'ясної продуктивності великої рогатої худоби.

Тому питання збільшення виробництва яловичини, підвищення її якості і зниження собівартості є надзвичайно актуальною проблемою. Вирішення якої має велике народногосподарське значення.

Матеріали та методика. Матеріалами роботи послужили: спеціальна література, виробничо-фінансові плани, дані бухгалтерського, зоотехнічного, племінного та ветеринарного обліків, методична література, власні дослідження і спостереження.

У роботі використано такі методи досліджень: зоотехнічний, економічний та біометричний з застосуванням обчислювальної техніки.

Результати досліджень. Дослідження показало, нині в Україні велика кількість вибракуваних корів молочних і комбінованих порід реалізується на м'ясо невисокою живою масою і низькою категорією вгодованості. У результаті на кожній голові втрачається 30-40 кг м'яса. Відомо, що від забою таких корів одержують яловичину низької якості.

Щорічно з основного стада вибраковується близько 30% корів. Слід зазначити, що вони реалізуються на м'ясо без відгодівлі і нагулу.

Відгодівля - це заключний етап у виробництві яловичини. Завданням відгодівлі є збільшення живої маси, вгодованості, забійної маси та поліпшення якості м'яса за короткі терміни. Збільшення кількості власне м'яса в тілі тварин залежить від їхнього віку, породи, статі та інтенсивності росту. Відгодування характеризується відкладанням майже виключно жиру.

Для виробництва м'яса використовують переважно молодняк великої рогатої худоби, який залишився після комплектування основного стада, та дорослу вибракувану худобу

У молодих тварин, власне м'ясо нагромаджується в тілі за рахунок утворення нових м'язових волокон та їх потовщення. Водночас у молодих тварин відкладається і жир. З віком інтенсивність росту м'язової тканини сповільнюється, а відкладання жиру зростає. У дорослих тварин маса тіла збільшується переважно за рахунок відкладання жиру при незначному збільшенні м'язів за рахунок їх потовщення. Тому відгодівлю молодняку великої рогатої худоби слід розглядати як заключний період вирощування, коли збільшення маси тварин відбувається за рахунок росту м'язових. тканин і кісток при одночасному інтенсивному резервуванні поживних речовин.

На ефективність відгодівлі впливає її тривалість. Тому важливо створити усі умови для того, щоб строки відгодівлі худоби були максимально скорочені. Тривалість відгодівлі залежить від породи, віку, умов утримання, вгодованості та рівня годівлі. Молодняк віком до

одного року відгодовують протягом 6 - 7 місяців, у віці 1,5 - 2 роки та дорослу худобу - 3 - 4 місяці. Відгодівля вибракуваних корів нижче середньої категорії вгодованості може тривати від 60 до 90 днів.

Для зниження собівартості виробництва яловичини слід використовувати дешеві корми - відходи переробки сільськогосподарської сировини (жом, барда, м'язга тощо). Можна відгодовувати на силосі, сінажі, доповнюючи раціон невеликими кількостями коренеплодів і концентрованих кормів, а також випасаючи тварин (нагул).

Корми, які використовують для відгодівлі худоби, бідні та протеїн, тому рекомендуємо вводити для покриття дефіциту протеїну в раціон – карбамід.

Сечовина (карбамід) - біла кристалічна речовина, без запаху, містить 46,0 - 46,3% азоту, солонувато-гірка на смак, добре розчиняється у воді. Випускається хімічною промисловістю у вигляді кристалічного порошку або дрібних гранул. Кристалічна сечовина (карбамід) швидко злежується і тому не така зручна для використання. У гранульованому вигляді за нормальних умов зберігання сечовина не злежується протягом 8-10 місяців.

Враховуючи те, що господарство в достатній кількості забезпечене кормами власного виробництва, доцільно використати відгодівлю худоби на силосі. Силос містить багато вуглеводів, забезпечує нормальний ріст тварин і відкладення жиру. Відгодівля силосом найдоцільніша в осінньо-зимовий період. Для відгодівлі пропонується використання кукурудзяного силосу.

Дорощують і відгодовують молодняк на силосі протягом 200-300, дорослу худобу – 90-100 днів. Прирости живої маси складають 800-900 г за добу.

Нагул худоби - найдешевший спосіб відгодівлі при випасанні її на природних або культурних пасовищах.

В даному випадку пропонується - використання пасовищ із підгодівлею тварин зеленою масою, силосом, концкормами. Нагул дає змогу одержувати дешеву і найбільш біологічно повноцінну яловичину. Гурти комплектують навесні, до вигону тварин на пасовища. Нагул триває звичайно 120 - 140 днів.

Слід передбачити водопої. Напувати тварин треба 3 - 4 рази на добу чистою і прохолодною водою. Протягом усього періоду нагулу треба стежити, щоб тварини були забезпечені кухонною сіллю та фосфоро-кальціевим підкормом. Корита із ними необхідно встановити у загонах, біля водопою та годівниць. Навантаження поголів' я на одиницю площі пасовища залежать від типу пасовища і якості травостою. При правильний організації нагулу середньодобові прирости живої маси досягають 1000 г.

Успіх нагулу значною мірою залежить від розпорядку дня. Протягом доби худобу пасуть 12-14 годин. У спекотні дні худоба повинна відпочивати під навісом біля водопою.

Висновки. В результаті нагулу та відгодівлі значно збільшується економічна ефективність виробництва м’яса. Отже, необхідно максимально розширити використання технології нагулу з використанням пасовищ в сполученні з заключною інтенсивною відгодівлею вибракуваних корів. Впровадження вищезгаданих резервів дозволить відносно швидко збільшити виробництво яловичини, покращити її якість і зменшити собівартість.

МЕТОДИЧНІ ПІДХОДИ ДО АНАЛІЗУ ПОДАТКОВОГО НАВАНТАЖЕННЯ НА ОСНОВНІ ПОКАЗНИКИ ДІЯЛЬНОСТІ СУБ'ЄКТА ГОСПОДАРЮВАННЯ

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Ринкові засади господарювання відкритого типу ідентифікують системну соціально-економічну категорію «податки», на яку покладається не тільки домінантна фіскальна функція, але ще й регулююча та розподільча, що в комплексі передбачає можливість формування компоненти системи забезпечення управління суспільно-економічним розвитком на національному рівні. Наведений вид управління продукує появу низки явищ та процесів, а отже й аналітично-оцінювальних індикаторів і маркерів, які потребують аналітичного дослідження, так як є надзвичайно важливими для ефективного функціонування економічних суб'єктів на мікрорівні та сталого розвитку державних інституцій на макрорівні. До таких управлінських явищ і процесів слід віднести аналіз взаємозв'язків та взаємозалежностей між податковими платежами, їх видами та доходами, витратами, іншими результативними показниками діяльності суб'єктів господарювання. У контексті порушеного питання актуально вести мову про податкове навантаження як поняття чи категорію, які характеризують відношення величини нарахованих і сплачених податків до домінантних результативних показників розвитку суб'єкта господарювання, що мають узагальнююче та вартісне вираження.

Проблеми багатоаспектності поняття «податкове навантаження», відсутності уніфікованих підходів до розкриття змісту та єдиних методологічних правил визначення посилюються браком практики залучення досліджуваної категорії до переліку об'єктів аналітичної роботи на мікрорівні. Суб'єкти управління не здійснюють оцінку податкового навантаження на ключові параметри фінансово-господарської діяльності з метою оптимізації оподаткування в рамках податкового законодавства, що позбавляє керованих ними суб'єктів господарювання конкурентних переваг у нестійкому ринковому середовищі.

Зміст податкового навантаження через систему функцій, що виконуються податками вдало розкриває Н.В. Ярова стверджуючи, що «податкове навантаження – показник, що найбільшою мірою характеризує взаємодію фіскальної та регулюючої функцій податків, а також ступінь централізації та усуспільнення внутрішнього валового продукту і його складових, який, з одного боку, містить відбиток суб'єктивних дій уряду, а з другого, – відображає об'єктивні ринкові закономірності, особливості економічної моделі та досягнутий рівень соціально-економічного розвитку країни» [1]. Для практичного використання переваг оцінки податкового навантаження на мікрорівні прийнятним є розкриття її алгоритму за допомогою аналітичних показників, які дозволяють не тільки отримати числове значення для подальшого порівняння між періодами (суб'єктами господарювання, галузями тощо), але й забезпечують можливість математичного окреслення взаємозв'язків та взаємозалежностей між основними процесами та результативними показниками фінансово-господарської діяльності.

Гавриленко Н.В. [2] податкове навантаження на діяльність суб'єкта господарювання розглядає в якості абсолютного показника як суму сплачених податків, зборів та платежів, а також виставлених претензій податковими органами. Більшість науковців та практиків зміст податкового навантаження досліджують як відносну величину у відсотковому чи

коефіцієнтному вигляді. Зокрема, О.В. Балашова [3] пропонує визначати податкове навантаження як частку нарахованих податків та платежів до суми коштів, отриманих від реалізації товарів, робіт, послуг та коштів, що отримані з інших непозикових джерел. У свою чергу Т.К. Островенко [4] під досліджуваною величною вбачає відношення сплачених податків та зборів до загальної величини доходів суб'єкта господарювання. До аналогічних висновків приходить Ю.М. Кушнірчук [5], досліджуючи податкове навантаження з макроекономічної точки зору. Єфименко Т.І. та А.М. Соколовська [6] в якості бази порівняння при визначенні податкового навантаження для юридичних осіб ідентифікують створену ними у звітному періоді додану вартість.

На думку О.Ю. Буцької «загальна методика оцінки податкового навантаження на мікрорівні має враховувати співвідношення між сумою податкових витрат (як суб'єктів підприємництва, так і фізичних осіб) та суми скорегованих доходів (за мінусом непрямих податків)» [7, с. 27]. Наведений підхід є справедливим, адже при визначенні складових розрахунку відносного показника податкового навантаження слід оперувати величинами, які якнайкраще характеризують об'єкти господарської діяльності не тільки з облікової точки зору, але й з економічної. Крім цього при визначенні податкового навантаження слід враховувати той факт, що окремі податки не несуть витратного навантаження для суб'єкта господарювання, а сплачуються іншими економічними суб'єктами, зокрема фізичними особами. Окремі науковці, зокрема О.І. Новік [8] податкове навантаження розглядає як відношення загальної величини сплачених податків до результативних показників господарської діяльності, а саме до чистого прибутку. Дане твердження є досить суперечливим, адже на величину кінцевих фінансових результатів впливає значна кількість факторів, що може призвести до необґрунтованого трактування результатів здійсненого податкового аналізу.

Отже, як аналітичний показник податкове навантаження може характеризувати загальні або ж індивідуальні параметри фінансово-господарської діяльності та системи оподаткування суб'єкта господарювання, а також відображати абсолютні або ж відносні величини, які характеризують розрахункові, фінансово-майнові та результативні аспекти господарської діяльності.

Доцільно відмітити, що визначення податкового навантаження суб'єкта господарювання за допомогою аналітичних показників повинно базуватися на низці правил та організаційно-методичних тверджень, а саме:

1) визначення рівня податкового навантаження доцільно проводити за допомогою відносних показників, які характеризують не тільки загальні аспекти взаємозв'язку величини сумарних податкових нарахувань з іншими фінансовими показниками, але й індивідуальні (оцінка впливу окремих видів податків, платежів та зборів);

2) необхідно розмежовувати суми податкових зобов'язань за видами податків, враховувати приналежність податкових платежів до ідентифікації витрат або ж зобов'язань суб'єкта господарювання;

3) оцінка рівня податкового навантаження повинна здійснюватися шляхом порівняння величини податкових платежів та прирівняних до них зборів із ключовими параметрами фінансово-господарської діяльності (доходи, витрати, фінансові результати, активи, пасиви);

4) ідентифікація методичного підходу та системи показників податкового аналізу повинна здійснюватися виходячи із інформаційних потреб систем управління.

Оцінка рівня податкового навантаження на мікрорівні потенційно може забезпечувати органи державного управління та управлінський персонал релевантною інформацією для визначення основних аспектів податкової політики на національному рівні та стратегій розвитку – на рівні суб'єкта господарювання.

Таким чином, проведення аналізу податкового навантаження фінансово-господарської діяльності є важливим атрибутом ринкових умов господарювання та ефективного управління, адже отримана аналітична інформація є релевантною для порівняння між суб'єктами господарювання, галузями чи секторами економіки, виступає в якості

індикаторів, які вказують на необхідність зміни системи оподаткування, розширення чи зменшення обсягів діяльності, використання аутсорсингової форми для виконання ключових господарських операцій, на потреби реструктуризації, реорганізації чи поділу складових фінансово-господарської діяльності, зміни асортименту чи номенклатури продукції, застосування тих чи інших підходів до управління, стратегій розвитку тощо.

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ПЕРЕДУМОВИ НОРМУВАННЯ ПОТРЕБИ В ТРАКТОРАХ КЛАСУ 1,4 ДЛЯ ВЕЛИКОТОВАРНИХ АГРАРНИХ ПІДПРИЄМСТВ

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За призначенням, як класифікаційною ознакою, серед інших розрізняють універсально-просапні трактори, найбільш представницькими яких в структурі тракторних парків аграрних підприємств в недалекому минулому були колісні трактори класу 1,4. За розробками і узагальненнями В.Р. Губка та ін. [1] ці трактори, крім іншого, широко використовують на транспортних роботах. В різних природно-господарських зонах України їх застосовують на транспортуванні та внесенні органічних і мінеральних добрив, транспортуванні зеленої маси, згрібанні і транспортуванні соломи та її скиртуванні, виконанні транспортних робіт на заготівлі силосу, транспортуванні картоплі від комбайнів, гички цукрових буряків, навантажуванні і транспортуванні їх коренів, транспортуванні початків кукурудзи та інших навантажувально-розвантажувальних і транспортних роботах.

Колісні трактори класу 1,4 відповідної потужності тепер почали виготовляти і в Україні [2]. В опрацьованих моделях цих тракторів вгадуються конструктивні елементи тракторів виробництва Південним машинобудівним заводом (м. Дніпро), який тривалий час виготовляв трактори, що були відомі під маркою «ЮМЗ».

Найбільш поширеним методом визначення потреби в тракторах є метод, що базується на побудові графіків завантаження тракторів (графіків машиновикористання) на підставі опрацьованих технологічних карт вирощування і збирання сільськогосподарських культур. Широко використовують і так званий нормативний метод визначення потреби в засобах механізації. Наприклад, в працях [3–5] знаходимо нормативи потреби в тракторах різного класу на 1000 га ріллі та в [6] – інформацію про середню необхідну кількість тракторів різного класу для механізації рослинництва в різних зонах України. Вказані нормативи досить суперечливі і опубліковані наприкінці 80 років 20-го сторіччя. Так, за [3] для підприємств України норматив потреби в тракторах класу 1,4 з урахуванням обсягів механізованих робіт, виконуваних в рослинництві, тваринництві, підсобних виробництвах, сільському будівництві, при меліорації та капітальному ремонті визначений як 8,79 на 1000 га ріллі і багаторічних насаджень. За іншим джерелом [4] – 8,0, а за даними [5] – 6,69. Середня необхідна кількість тракторів класу 1,4 (шт. на 1000 га ріллі і багаторічних насаджень) для механізації рослинництва в підприємствах степової зони України за [6] визначена такою: 9,11 (на зрошуванні) і 5,66 (без зрошування). Проте визначити та потребу у відповідних тракторах можна і на підставі аналізу функціонування реальних машинно-тракторних парків (МТП) конкретних сільськогосподарських підприємств [1]. Такий аналіз вважають (Ю.К. Кіртбая та інші [1]) одним із методів обґрунтованого проектування технічної оснащеності підприємств, реалізація якої дозволяє забезпечити відповідний рівень механізації виробничих процесів і сприяє поліпшенню ефективності використання МТП.

В пропонованому повідомленні з урахуванням результатів [7, 8] раніше проведених досліджень висвітлено вплив кількості тракторів класу 1,4 в структурі тракторних парків в розрахунку на 1000 га ріллі на найбільш узагальнюючі показники ефективності функціонування МТП великотоварних аграрних підприємств. В дослідженні кількість тракторів класу 1,4 $n_т$ (шт. на 1000 га ріллі) визначена як факторіальна ознака, а узагальнюючі показники ефективності функціонування МТП підприємств прийняті в якості результативних ознак, за які були визначені з урахуванням висловлювань акад. Б.С. Свірщевського [9] та проф. Ю.К. Кіртбая [10] урожайність $U_{оп}$ (т/га) і собівартість $C_{оп}$

(грошові одиниць – гр. од.) озимої пшениці, щільність $Щ_{мр}$ і собівартість $C_{мр}$ механізованих робіт та вихід валової продукції рослинництва $B_{пр}$ (грошові одиниці – гр. од.) на 1 га ріллі.

Об'єкт дослідження – функціонування МТП 275 великотоварних аграрних підприємств Дніпропетровської області, що характеризує машиновикористання в рослинництві в умовах степової зони України. Вихідні дані щодо визначення факторіальної і результативних ознак вибирали з матеріалів державної і статичної збіжності підприємств. Обробка зібраних статистичних даних, які в повідомленні назвали експериментальними, здійснена на засадах дисперсійного і кореляційного аналізів. Були складені відповідні двомірні варіаційні ряди та побудовані п'ять кореляційних таблиць, в яких факторіальна і результативні ознаки були розподілені на п'ять статистичних груп. За опрацьованими кореляційними таблицями вели розрахунки коефіцієнтів кореляції і кореляційних відношень.

Розмах варіювання кількості тракторів класу 1,4 коливався від 0,55 до 8,94 за середнього арифметичного значення і середнього квадратичного відхилення відповідно 3,73 і 0,127 та коефіцієнта варіації розподілу 30,2%. Емпіричний розподіл кількості тракторів класу 1,4 мав додатні асиметрію і ексцес відповідно 0,84 і 4,00. За такими коефіцієнтами асиметрії і ексцесу емпіричний розподіл кількості тракторів досліджуваного класу можна характеризувати як середньоасиметричний і середньоексцесивний [11].

Класовий інтервал кількості тракторів становив 1,68, а середньогрупова кількість тракторів в першій, другій, третій та четвертій і п'ятій статистичних групах становила відповідно 1,38; 3,06; 4,74 та 6,42 і 8,1 трактора на 1000 га ріллі.

Коефіцієнт кореляції між урожайністю озимої пшениці і оснащеністю підприємств тракторами класу 1,4 дорівнював 0,202 за кореляційного відношення урожайності озимої пшениці по оснащеності підприємств тракторами класу 1,4, що дорівнювало 0,244.

Кореляційний зв'язок собівартості озимої пшениці і кількості тракторів класу 1,4 оцінюється від'ємним коефіцієнтом кореляції, що дорівнює мінус 0,139. При цьому кореляційне відношення собівартості озимої пшениці по оснащеності підприємств тракторами класу 1,4 дорівнювало 0,151.

Коефіцієнт кореляції між щільністю механізованих робіт і кількістю тракторів класу 1,4 в структурі тракторних парків підприємств на 1000 га ріллі дорівнював 0,404 за кореляційного відношення результативної ознаки по факторіальній 0,411.

Кореляційний зв'язок собівартості механізованих робіт і кількості тракторів класу 1,4 на 1000 га ріллі в структурі тракторних парків великотоварних аграрних підприємств оцінюється коефіцієнтом кореляції 0,012 та кореляційним відношенням $C_{мр}$ по $n_т$, що дорівнює 0,369.

Між виходом валової продукції рослинництва на 1 га ріллі і оснащеністю підприємств тракторами класу 1,4 в розрахунку на 1000 га ріллі виявлений кореляційний зв'язок з коефіцієнтом кореляції, що дорівнював 0,342, та кореляційним відношенням $B_{пр}$ по кількості тракторів класу 1,4 на 1000 га ріллі в структурі тракторних парків підприємств, яке становило 0,351.

У всіх досліджуваних парних зв'язках значення кореляційних відношень перевищували абсолютні значення коефіцієнтів кореляції. Перевірка лінійності зв'язку між визначеними та прийнятими для аналізу результативними ознаками і факторіальною за низкою відповідних критеріїв (*t*-критерієм Стьюдента, *F*-критерієм Фішера, різницею квадратів кореляційних відношень і коефіцієнтів кореляції на *z*-критерієм [11–15] показала, що досліджувані зв'язки не слід вважати лінійними. Для досліджуваних зв'язків характерна криволінійна зміна результативних ознак залежно від факторіальної. З'ясовано, що зміна урожайності озимої пшениці, щільності механізованих робіт і виходу валової продукції рослинництва на 1 га ріллі залежно від кількості тракторів класу 1,4 на 1000 га ріллі описується кривими, що близькі до логістичної. Зміна собівартості озимої пшениці і механізованих робіт залежно від кількості тракторів класу 1,4 на 1000 га ріллі описується увігнутими параболами.

Максимум урожайності озимої пшениці, мінімальна собівартість і оптимізація

щільності механізованих робіт та швидкість зміни виходу валової продукції рослинництва забезпечуються в підприємствах, в яких кількість тракторів класу 1,4 становить 6,42 на 1000 га ріллі. Собівартість озимої пшениці мінімізується в підприємствах, що мають середньогрупову кількість тракторів класу 1,4 8,1 на 1000 га ріллі. Інтенсивність зниження собівартості озимої пшениці значно зповільнюється при збільшенні кількості тракторів класу 1,4 на 1000 га ріллі понад 6,42.

З'ясовані залежності дозволяють більш обґрунтовано підходити до визначення потреби в тракторах класу 1,4 в розрахунку на 1000 га ріллі та комплектування ними тракторних парків великотоварних аграрних підприємств.

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МОВНА КАРТИНА СВІТУ В ЗАГАДКАХ

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Світ постає для людини таким, яким вона в міру свого розвитку пізнає його і освоює. Картина світу — це те, що йде передусім від людини, плід її сприйняття, фантазій, мисленнєвих процесів і перетворювальної діяльності.

Проблема мовного світосприймання була сформульована ще В.Гумбольдтом: "різні мови – це не різні позначення того самого предмету; це різне бачення і відображення його" і далі: "Всяка мова, позначаючи окремі предмети, насправді творить: вона формує для народу, який є її носієм, картину світу" [2, с. 259].

Термін "картина світу" був уведений у науковий обіг у фізиці в кінці 19-го – на початку 20-го століття. "Фізична картина світу" розглядається як "сукупність внутрішніх образів зовнішніх предметів, з яких логічним шляхом можна отримати знання про властивості та поведінку предметів" або "образ довкілля, що формується фізичною наукою та відбиває реальні закономірності природи" [6, с. 156]. З часом поняття "картина світу" в природничих науках стало означати специфічну концептуальну структуру, що формується за допомогою наукових методів і понять.

Мовна картина світу – це спосіб відбиття реальності у свідомості людини, що полягає у сприйнятті цієї реальності крізь призму мовних та культурно-національних особливостей, притаманних певному мовному колективу; інтерпретація навколишнього світу за національними концептуально-структурними канонами.

Англійські і українські загадки, своєрідно відтворюючи фундаментальні категорії дійсності (Людина, Простір, Час), дають матеріал для аналізу як концептуальної, так і мовної картин світу.

Мовна картина світу на матеріалі народних загадок подається через лексико-семантичні поля, основу яких становлять опорні (вузлові, ключові) лексеми, на базі котрих утворюється найбільша кількість образотворчих засобів.

Головне місце серед усіх народних висловів належить загадкам, що входять до семантичного поля «Людина». У мудростях вона відображена у різних аспектах, тобто аналізоване поле поділяється на декілька підгруп: людина як біологічна істота, сім'я, одяг, транспорт, дім.

Аналіз загадок, що входять до підгрупи "Дім", дає змогу стверджувати, що невід'ємним атрибутом української домівки була піч, яка відзначалась своєю поліфункційністю: в ній варили їсти, пекли хліб, вона обігрівала хату, на ній спали (*що то за пані у білім жупані, дружить з рогачами, горщиками, казанами, в роті в неї смакота, що ж за пані то така; що від хліба передніше; під землею рай кипить; в куті ся притулила, а в зимі людям мила).*

Ключова лексема *broom – мітла* в англійському та українському фольклорі представлена на основі використання образу метушливої пані, що бігає по підлозі та відпочиває або у кутку, або під лавою (*what goes over the floor and then stands in the corner; по землі бігає, під лавою лягає; стоїть пані у жупані, мотузком підперезана; без рук, без ніг, - по хаті бігає).*

В українській та англійській мовних картинах світу спостерігаємо розходження у реалізації концепту *table – стіл.* Крім того, англійський фольклорний фонд багатший на загадки із аналізованою ключовою мовною одиницею. В англійській мовній свідомості це поняття опосередковане образом чотирьох братів, або ж істоти на чотирьох ногах.

Смислоорганізуючим центром тут є числівник чотири, в українській же мові це число не отримало основного смислового навантаження (*we are four brothers living under one roof; what has four legs but is not an animal; має роги і ноги, а держиться підлоги).*

Символізація лінгвальної одиниці *sieve – сито* в українському фольклорі представлена більшим числом асоціативних метафоричних відповідників. Проте в обох культурах домінує спільна риса – діра в описі аналізованої мовної одиниці (*I bought a new one and it was full of holes; діряве небо все поле покрило основа соснова, а липове пітканння; в лісі росте, в хліві ночує, в баби на руках танцює; на дирявім мості танцювали гості).* Окремим фрагментом української етномовної культури є загадки на позначення *макітри* та *макогона (без голови, а з ушами; біля тіла вуха, а голови немає; лисий коник коло стайні бігає).*

Досить багатогранно та широко представлені в українському фольклорі знаряддя праці, що не мають відповідників в англійських загадках. Широку амплітуду значень має лексема *коса:* це і горбатий дід, і беззубий їдець (*хто їсть без зубів; горбатий дід усе поле збігав; сіно я заготовляю, дівчину прикрашаю, а у річці чи на морі погуляю на просторі).*

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ВПЛИВ ДОПОСІВНОЇ ОБРОБКИ НАСІННЯ НА ФОРМУВАННЯ БІОМЕТРИЧНИХ ПОКАЗНИКІВ СОЇ

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Формування майбутнього врожаю сої розпочинається вже з підготовки насіння до сівби, адже для отримання дружних сходів важливо мати не тільки якісне сертифіковане насіння, добре підготовлений ґрунт, але й сприятливі погодні умови у цей період: достатня кількість продуктивної вологи у посівному шарі та оптимальна температура повітря й ґрунту. Зменшити негативний вплив несприятливих погодних умов у період проростання насіння, сходів і росту рослин сої на ранніх стадіях розвитку можливо лише шляхом практикування таких елементів технології вирощування сої як інокуляція насіння та допосівна обробка насіння концентрованими добривами для обробки насіння.

Дослідженнями, проведеними у різних ґрунтово-кліматичних зонах України доведено, що обробка насіння мікродобривами – найбільш ефективний спосіб забезпечення рослин поживними речовинами в початковий період їх росту та розвитку. Це дає можливість більш повно реалізувати потенційну продуктивність сучасних сортів сої інтенсивного типу, зважаючи на краще забезпечення рослин елементами мінерального живлення, що сприяє підвищенню рівня виживання рослин, активності фотосинтезу та симбіотичної фіксації азоту [1, С. 13], формуванню більшої маси та висоти рослин, розвитку кореневої системи [5, С. 39]. Разом з тим покращуються показники індивідуальної продуктивності та урожайності сої [3, С. 196], якісні показники [4, С. 84] та біохімічний склад насіння сої [2, С. 138].

Метою наших досліджень було вивчення впливу допосівної обробки насіння рідким концентрованим добривом на ріст і розвиток рослин сої в умовах Лісостепу Західного.

Польові дослідження проводилися Хмельницькою ДСГДС ІКСГП НААН на чорноземах опідзолених, середньо суглинкових. Ґрунт достатньо насичений основами – 39,8–42,0 мг екв. на 100 г, має гідролітичну кислотність 1,8–2,7 мг екв. на 100 г ґрунту. Вміст гумусу (за Тюріним) – 3,2 %. Формами поживних речовин середньо забезпечений: вміст азоту, що легко гідролізується, – 14,4–16,6 мг, фосфору рухомого – 11,0–12,0 мг, калію обмінного – 7,8–8,0 мг на 100 г ґрунту.

Досліджуючи ефективність використання рідкого концентрованого добрива при допосівній обробці насіння сої, насамперед, нами встановлено його позитивний вплив на польову схожість, що зумовило збільшення густоти стояння рослин сої у сорту Сіверка – на 5,8 %, у сорту Титан – на 5,6 % порівняно до контролю (табл. 1).

Таблиця 1. Густота стояння рослин залежно від способів допосівної обробки насіння, шт./м^2

Сіверка			Титан		
без обробки	концентроване добриво		без обробки	концентроване добриво	
рослин на 1 м^2	рослин на 1 м^2	± до контролю, %	рослин на 1 м^2	рослин на 1 м^2	+ до контролю, %
83,2	88,0	+5,8	70,8	74,8	+5,6

Подальшими спостереження відмічено, що допосівна обробка насіння істотно впливала на ріст і розвиток рослин сої, а саме: ріст стебла у висоту, масу рослини, кореня та листя. Так, висота рослин сої на ранніх стадіях розвитку (4–5 трійчастий листок) збільшувалася у сортів Сіверка на 11,3 % та Титан – на 10,6 %, маса рослини – на 8,8 % та 12,6 %, маса кореня – на 23,8 % та 22,7 %, маса листя – на 19,1 % та 19,0 % відповідно (табл. 2).

Таблиця 2. Вплив допосівної обробки насіння на формування біометричних показників рослин сої

Варіант допосівної обробки насіння	Маса рослини		Маса кореня		Маса листя	
	Сіверка	Титан	Сіверка	Титан	Сіверка	Титан
4–5 трійчастий листок						
Без обробки	19,3	13,5	2,1	2,2	6,8	6,3
Концентроване добриво	21,0	15,2	2,6	2,7	8,1	7,5
Цвітіння						
Без обробки	23,0	24,3	3,0	3,3	7,8	8,2
Концентроване добриво	25,7	27,9	3,6	4,2	9,1	9,8
Формування бобів						
Без обробки	31,7	35,0	3,1	4,7	9,0	11,5
Концентроване добриво	40,5	44,5	3,7	5,6	11,6	14,8

На час формування бобів висота рослин сої досягла свого максимуму за вегетаційний період і становила у сорту Сіверка 88,5 та 98,7 см, у сорту Титан – 91,4 та 103,7 см. Допосівна обробка насіння концентрованим добривом сприяла зростання цього показника у сорту сої Сіверка на 11,5 %, у сорту Титан – на 13,4 %. Загальна маса рослини зростала на 27,8 % та 27,1 %, маса кореня – на 19,4 % та 19,1 %, маса листя – на 28,9 % та 28,7 % відповідно.

Таким чином, беззаперечним є той факт, що допосівна обробка насіння є одним із найважливіших елементів технологічного процесу вирощування сої, який позитивно впливає на формування густоти стеблестою рослин, їх біометричних показників та й підвищення врожайності загалом. Вона не є трудомістким процесом, а прибуток від її застосування досить вагомий, адже підраховано, що витрати на допосівну обробку насіння становлять лише 3–4 % від отриманого прибутку.

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ДЕКАБРЬСКИЕ СОБЫТИЯ 1986 ГОДА ГЛАЗАМИ ОЧЕВИДЦЕВ

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Обретение Казахстаном независимости поставило перед ним трудные и ответственные задачи возрождения политической, социально-экономической, правовой и культурной основы государственности. Следствием всех преобразований явилось стремление казахстанских исследователей заново переосмыслить наиболее важные исторические рубежи и периоды истории казахского народа. Распад бывшего Советского Союза привел практически полному разрушению научных и культурных связей между республиками, породил вакуум в изучении отдельных аспектов их истории. В своей программной статье «Взгляд в будущее: Модернизация общественного сознания» Глава государства Н.А.Назарбаев акцентирует свое пристальное внимание на вопросы обновления и совершенствования исторического сознания казахстанского общества на основе прагматизма.

История выступает в качестве важного элемента для духовного возрождения личностей и всего общества в целом. К сожалению, в условиях господства жесткой советской тоталитарной системы историческое сознание народов Центральной Азии подверглось деформации. Отдельные попытки восстановления правдивой истории и его ярких представителей по политико-идеологическим соображениям пресекались и надежно стирались из памяти народа.

В настоящее время казахстанское общество оказалось перед сложным процессом социальной и политической самоидентификации. При этом важнейшим инструментом этого процесса стало познание своей глубинной истории, прошлого, корней, возрождении в народной памяти забытых имен национальных героев нашего Отечества в тот или иной период времени.

24 ноября 2020 года по распоряжению Президента Республики Казахстан Касым Жомарта Кемеловича Токаева была создана специальная комиссия, которая приступила к широкомасштабной работе по выявлению и реабилитации жертв массовых политических репрессий XX столетия. К категории жертв той сложной и противоречивой эпохи можно по праву отнести и национальных героев казахского народа активных участников трагических декабрьских событий 1986 года в Алма – Ате.

В своей взвешенной и научно-аргументированной статье «Независимость превыше всего» Президент Республики Казахстан Касым Жомарт Кемелович Токаев, обращаясь к сложному и противоречивому периоду конца 1980-х годов XX столетия, пишет: « В этом году исполняется 35 лет со времени известных декабрьских событий. В 1986 году сыновья и дочери казахского народа, не побоявшись гнева советской власти, вышли на улицы, чтобы защитить честь нации. Символично, что ровно 5 лет спустя была провозглашена наша Независимость. Нам необходимо по достоинству оценить и всячески популяризовать мужество и подвиг героев Желтоксана»[1].

Мы полностью разделяем точку зрения Президента страны Касым Жомарта Кемеловича Токаева и считаем, что сегодня важно раскрыть роль и место в мировой истории легендарных защитников нашего Отечества участников декабрьских событий 1986 года в Алма-Ате. Безусловно, это событие окажет позитивное воздействие для решения задач модернизации общественного сознания, который в свою очередь даст положительный импульс в популяризации и изучения богатейшего историко-культурного наследия выдающихся исторических личностей Казахстана.

К сожалению, долгие годы в условиях нарастания политического и духовно-идеологического давления, прессинга и нажима со стороны партийных властей имена доблестных национальных героев участников трагических декабрьских событий 1986 года в Алма-Ате практически не упоминались на страницах средств массовой информации. Более того, партийные идеологи наложили «вето» то есть запрет на упоминании их имен. И только в условиях суверенного развития Республики Казахстан, с ростом и возрождением духовного и национального самосознания народов Центральной Азии историческая справедливость восторжествовала, и благородные потомки Желтоксановцев смогли по достоинству оценить их патриотический подвиг и мужество во благо процветания и свободы нашей независимой Республики.

В этой научной публикации мы попытаемся проследить жизненный путь и деятельность тех легендарных героев участников трагических декабрьских событий 1986 года в Алма-Ате, которые смело смогли выразить свое негодование, несогласие и возмущение вышестоящим инстанциям в связи с заменой Первого секретаря ЦК Казахстана Н.А.Назарбаева.

В государственном архиве общественно-политической истории Туркестанской области хранятся архивные документы и материалы, участников тех драматических и трагических событий 1986 года. В частности в их личных делах содержатся протоколы допроса, семейные фотографии, газетные публикации, посвященные вышеуказанной теме, правительственные награды от имени Первого Президента Республики Казахстан Н.А.Назарбаева, справки о реабилитации жертв участников декабрьских событий 1986 года и.т.д.

Одним из активных участников декабрьских событий 1986 года в Алма-Ате был уроженец г.Кентау Южно-Казахстанской области, ныне проживающий в поселке Джезказган Джезказганской области Шекербеков Муратбек 1963 года рождения. Он был осужден по статье 60 УК КазССР к двум годам 6 месяцам лишения свободы с отбыванием наказания в исправительно-трудовой колонии общего режима. Он был признан виновным в том, что находясь в состоянии алкогольного опьянения в поселке Джезказган 2 января 1987 года между 2-3 часами ночи, будучи осведомленными из сообщений газет, из разговоров с друзьями о том, что 17-18 декабря 1986 года в Алма–Ате группа молодежи, подстрекаемая националистическими элементами, вышла на улицу города, высказывали неодобрение решению состоявшегося 16 декабря 1986 года в Алма–Ате пятого Пленума ЦК Компартии Казахстана, умышленно, с целью пробуждения национальной вражды, розни к русскому народу. Используя половую краску и малярную кисть, написал на стенах общественных зданий пропагандистско-агитационного характера слова призывы по своей сущности являющиеся проявлением национализма, национальной ограниченности и направленные на распространение взглядов, идей подрывающих доверие и уважение к другой национальности, возбуждающих чувство неприязни к ним. Надписи произведены на фасадной стороне продовольственного магазина №64 по улице Калинина, на фасадной части магазина «1000 мелочей» по улице Джамбула, на фасадной стороне магазина №146 «Трикотаж» по улице Джамбула, на фасадной стороне кинотеатра «Космос» по улице Ауэзова, на тыльной стороне этого же кинотеатра, на лицевой части 4 автоматов газированной воды расположенных перед кинотеатром «Космос», на стене жилого дома №24 по улице Ауэзова, на фасадной стороне продовольственного магазина № 71 по улице Ауэзова № 29. Допрошенный в суде в качестве подсудимого Шекербаев вину в предъявленном обвинении признал частично и пояснил, что действий в ночь на 2 января 1987 года будучи недовольным тем, что первым секретарем ЦК Компартии Казахстана избрали Г.В.Колбина по национальности русского, а не казаха, он решил выразить свое несогласие» [2].

Таким образом, из выше приведенного вытекает следующий вывод, что Шекербаев Муратбек как настоящий патриот своей Родины открыто выразил свое несогласие с избранием нового секретаря ЦК Компартии Казахстана Г.В.Колбина. Безусловно назначение

незнакомого для нашей страны нового руководителя задевала национальные интересы местных коренных жителей нашей Южной столицы.

Другим ярким представителем той противоречивой и сложной эпохи, выразивший своей апологет вышестоящим инстанциям был Аймаханов Куттыбек Ауелбекович уроженца Джамбула Алгабасского района Чимкентской области, ныне проживающегося в г.Алматы, ул. Айнабулак 3 дом 170, кв 8. Он был осужден по статье 60 УК КазССР к 5 годам лишения свободы. С учетом изменений, внесенных в приговор постановлением Президиума Верховного суда КазССР, Аймаханов признан виновным в том, что он 18 декабря 1986 года в большой группе лиц прибыл на площадь им. Брежнева в городе Алма-Ате, где имели место массовые беспорядки, размахивал палкой, на требовании работников милиции разойтись не реагировал, продолжительное время с толпой перемащался по улицам. Аймаханов Куттыбек Ауелбекович на предварительном следствии и в суде не отрицал, что участвовал 18 декабря 1986 года в уличном шествии, но утверждал, что никаких действий, нарушающих общественный порядок не совершал. Более того его обвиняли в том, что он разжигал национальную рознь и вражду» [3].

Таким образом, следует отметить, что Аймаханов Куттыбек Ауелбекович как настоящий гражданин и любящий свою Родину открыто не взирая на политическое давление, прессинг партийных структур выразил свое несогласие и протест в связи с избранием Первого секретаря ЦК Компартии Казахстана Г.В.Колбина. По существу были проигнорированы национальные интересы и позиции жителей многонационального Казахстана. Более того, ни один из собравшихся на центральной площади им. Л.И.Брежнева участников мирной политической демонстрации не выступал в роли разжигателя национальной розни и вражды между нациями и народностями, проживающими здесь вместе с великим и могучим казахским народом.

Еще одним из ярких участников тех трагических и драматических декабрьских событий 1986 года был Есжанов Тынышбек Карлыбаевич 1964 года рождения, уроженца села Жузумдук Келесского района Чимкентской области. 19 марта 1987 года приговором Алматинского городского суда он был осужден 3 годами лишения свободы по статье 65 УК КазССР. Его обвинили в том, что он выражал свое недовольство избранием нового секретаря ЦК Компартии Казахстана Г.В.Колбина и якобы намеренно разжигал национальную рознь и вражду между казахами и русскими народами. Приговор суда и последующие судебные постановления в отношении Есжанова Тынышбека Карлыбаевича, как и других активных участников тех событий, Постановлением пленума Верховного Суда Республики Казахстан от 24 декабря 1994 года были признаны необоснованными, в соответствии с Указом Президента Республики Казахстан Н.А.Назарбаева от 12.12.1991 года «О реабилитации граждан, привлеченных к ответственности за участие в событиях 17 – 18 декабря 1986 года в Казахстане он был реабилитирован» [4].

Таким образом, историческая справедливость восторжествовала, и благородные потомки очевидцев тех событий смогли по достоинству оценить их заслугу и долг перед своим Отечеством. Мы вполне убеждены в том, что их патриотические деяния и вклад достойно вписались в историческую летопись Независимого Казахстана. Будущее молодое поколение казахстанцев должны всегда помнить и не забывать тех национальных героев своего Отечества, которые пожертвовали своей жизнью ради достижения свободы и Независимости казахского народа. Необходимо навеки увековечить память наших легендарных героев Желтоксановцев, которые как отмечает Президент страны Касым Жомарт Кемелович Токаев не боясь преследований со стороны партийных и местных органов выразили свое негодование и возмущение в связи с избранием на должность Первого секретаря ЦК Компартии Казахстана неизвестного казахстанской научной общественности Г.В.Колбина.

В условиях 30 – летнего независимого развития нашей многонациональной страны историческая ретроспектива борьбы за суверенитет и свободу народов Центральной Азии

становится главным фундаментом построения нового демократического общества и государства в целом.

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ВИХОВАННЯ ТОЛЕРАТНОСТІ ЗДОБУВАЧІВ ПОЧАТКОВОЇ ОСВІТИ НА УРОКАХ ЛІТЕРАТУРНОГО ЧИТАННЯ

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У контексті сучасного розвитку суспільства активізується проблеми толерантності як об'єкта досліджень таких наукових галузей: філософії, психології, педагогіки. Різноаспектно у філософії цей феномен висвітлювали в працях О. Довгополова, Р. Валітова, В. Зінов'єв та ін. У психолого-педагогічних джерелах розглядаються основи свободи, поваги до прав іншої людини, терпимості, компромісу, особистісної значущості (А. Асмолов, І. Бех, С. Бондирєва, О. Безкоровайна, О. Докукіна, В. Кан-Калік, П. Кендзьор, А. Петровський та ін.). Особливо своєчасним вважаємо вивчення можливостей виховання толерантності в молодших школярів (Н. Бессараб, Н. Бирко, Л. Канішевська, А. Лесик, О. Попова, І. Сухопара та ін.), оскільки вчені констатують значний потенціал освітнього процесу та недостатню його практичну реалізацію.

Мета статті – розкрити умови виховання толерантності молодших школярів на уроках літературного читання.

Завдання: на навчальному матеріалі уроків літературного читання схарактеризувати можливості для виховання толерантності здобувачів початкової освіти.

Результати та дискусії. Концептуальними для нашого дослідження були теоретичні положення щодо потенціалу освітнього процесу початкової школи у вихованні учнів (О. Савченко, Н. Побірченко, Н. Скрипченко та ін.); пріоритетність особистісно орієнтованого (І. Бех, О. Вишневський, І. Якіманська та ін.), гуманістичного (Ш. Амонашвілі, М. Монтессорі, Я. Корчак, К. Роджерс, В. Сухомлинський та ін.); компетентнісного (О. Пометун, С. Сисоєва, В. Мачуський, А. Корнієнко, О. Литовченко та ін.) підходів, їх комплексне впровадження.

Погоджуючись з Л. Канішевською, будемо розуміти формування толерантності як процес цілеспрямованої й організованої взаємодії вихователя і вихованців, результатом якого буде формування толерантної свідомості, яка через толерантні емоції й гуманістичні мотиви реалізуватиметься в толерантній взаємодії з іншими людьми, виявлятиметься в поведінці та вчинках учнів, ціннісному ставленні до себе та інших» [4].

Як переконують психолого-педагогічні праці, віковий період розвитку молодших школярів вважається сенситивним для активного морального розвитку особистості, психічних пізнавальних процесів, емоційно-почуттєвої та мотиваційно-ціннісної сфер, а основними новоутвореннями є довільність, внутрішній план дії та рефлексія [1]. Провідна роль навчальної діяльності сприяє інтенсивному формуванню інтелектуальних і пізнавальних рис учнів і позитивно впливає на взаємовідносини з однолітками, вчителями та батьками [7].

Підтримуємо ідеї О. Савченко про те, що педагог має не лише розкривати зміст понять, а й ілюструвати конкретними прикладами, де пріоритетними все ж є підручники з літературного читання, дитяча художня література. Тому варто концентрувати увагу на творах, які подають зразки вдалого спілкування, групової взаємодії, прояву вмінь працювати в колективі [9].

Отже, у молодшому шкільному віці закладаються основи толерантності за допомогою виховання поваги до своєї родини, батьків, найближчого оточення, яким є освітнє середовище.

Формування толерантного ставлення учнів базується на індивідуальних особливостях (розвитку моральної, інтелектуальної та емоційно-вольової сфери, особистого досвіду взаємовідносин) та умов і соціальної ролі (впливу сім'ї, засобів масової інформації, Інтернету).

З метою уточнення потенціалу уроків літературного читання нами були досліджені програми для 1–4 класів – Програми Нової української школи (Типова освітня програма, розроблена під керівництвом О. Савченко, для 1–2 класів; Типова освітня програма, розроблена під керівництвом Р. Шияна, для 1–2 класів; Типова освітня програма, розроблена під керівництвом О. Савченко, для 3–4 класів; Типова освітня програма, розроблена під керівництвом Р. Шияна, для 3–4 класів); проаналізовано зміст підручників, за якими навчаються молодші школярі.

Аналіз змісту творів В. Сухомлинського, які пропонуються для читання молодшими школярами, дозволяє виділити такі напрями: оповідання, в яких розкривається милосердне ставлення до дітей, що мають фізичні вади («Горбатенька дівчинка», «Як Сергійко навчився жаліти»); оповідання та казки, в яких утверджується необхідність шанування різноманітності, поваги до проявів інакшості («Що краще?», «Соловей і Жук», «Хризантема і Цибулина», «Вороненя і соловей», «Найгарніша мама») тощо. Крім того, на уроках літературного читання варто використовувати види діяльності, спрямовані на розвиток у молодших школярів здатності розуміти й застосовувати принципи толерантності. Так, для учнів 1–2 класів було запропоновано гру «Не погодься». Вона передбачала, що учень або учениця розповідали, що вони (або однокласники) знають чи вміють робити, а інші мали погодитись із цим твердженням або заперечити, сказавши, що це неправда й аргументувати свої відповіді.

Для учнів 3-4 класів, на нашу думку, доцільно запропонувати творче завдання «Улюблена книжка», яке передбачало спочатку ознайомлення молодших школярів з дитячою книгою про толерантність шляхом зачитування фрагменту, а потім визначення джерела й пропозиція відповісти на запитання про зміст історії. Крім того, досить вдалим є спонукання молодших школярів навести приклади з власного досвіду, які б ілюстрували їхнє толерантне ставлення до інших чи навпаки порушення законів толерантності в їх присутності.

З-поміж форм, методів і засобів навчання, які впроваджувалися на уроках літературного читання і сприяли формуванню толерантності молодших школярів, найбільш вдалими були інтегровані уроки, уроки-мандрівки, уроки-ігри, уроки-діалоги, читання й обговорення казок, оповідань, віршів, віртуальні екскурсії, вікторини, проєктна діяльність, творчі завдання тощо.

Висновки та напрямки подальших досліджень. Отже, аналіз наукових джерел з проблеми формування толерантності учнів на уроках літературного читання та спостереження за практичною реалізацією його в контексті сучасної початкової школи дозволяє зробити висновок про значний потенціал, здатний забезпечити вироблення відповідних компетентностей за умов відповідної організації освітнього середовища та застосування педагогічно доцільних форм, методів, засобів. Успішна соціалізація здобувачів початкової освіти позитивно впливає на розвиток навичок толерантності. Подальшого вивчення потребує позаурочна діяльність молодших школярів, під час якої можна вдосконалювати вміння та навички толерантного ставлення.

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НАХОЖДЕНИЕ ПРЕДЕЛОВ ФУНКЦИЙ С ПРИМЕНЕНИЕМ ЭКВИВАЛЕНТНОЙ ФОРМЫ ВТОРОГО ЗАМЕЧАТЕЛЬНОГО ПРЕДЕЛА

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В данной статье автор предлагает правило для более лёгкого и быстрого нахождения пределов, связанных со вторым замечательным пределом, с использованием соответствующей эквивалентной формы.

Вспомним сам второй замечательный предел, а по сути последовательностную форму второго замечательного предела:

$\lim\limits_{n\to\infty}\left(1+\frac{1}{n}\right)^n = e$, где n – натуральная переменная.

Рассмотрим функциональную форму второго замечательного предела:

$\lim\limits_{x\to 0}\ (1+x)^{\frac{1}{x}} = e$, где x – действительная переменная.

Ранее автором была получена эквивалентная форма натуральной показательной функции:

$$e^x \sim 1 + x \text{ , то есть}$$

в бесконечно малой окрестности точки $x=0$ функции $y = e^x$ и $y = 1 + x$ эквивалентны, то есть в окрестности указанной точки эти функции ведут себя одинаково. Это значит, что если при вычислении предела функции $y = e^x$ его аргумент стремится к нулю, то саму функцию e^x можно просто заменить на линейное выражение $(1 + x)$, где x – аргумент натуральной показательной функции. Указанную эквивалентную форму можно написать по-другому:

$$1 + x \sim e^x .$$

Пусть теперь $1 + x = y \Rightarrow x = y - 1$. Если $x \to 0$, то $y \to 1$. В таком случае будет:

$$y \sim e^{y-1} \quad (\text{при } y \to 1).$$

Итак, окончательно имеем: $\boxed{x \sim e^{x-1}}$ (при $x \to 1$) , то есть

в бесконечно малой окрестности точки $x=1$ функции $y = x$ и $y = e^{x-1}$ эквивалентны, то есть в окрестности указанной точки эти функции ведут себя одинаково. Это значит, что если при вычислении предела показательно-степенной функции $y = x^z$ его основание x стремится к единице, а показатель z стремится к бесконечности, то основание этой функции можно просто заменить на показательное выражение e^{x-1} , где x – основание показательно-степенной функции.

Применим теперь полученное правило к конкретному примеру:

Пример. Найдите предел:

$$\lim_{x\to\infty}\left(\frac{3x-2}{3x+1}\right)^{2x}.$$

Решение. Это – неопределённость типа 1^{∞}. Аргумент показательно-степенной функции стремится к единице, поэтому можно применить соответствующую эквивалентную форму:

$$\lim_{x\to\infty}\left(e^{\frac{3x-2}{3x+1}-1}\right)^{2x}=\lim_{x\to\infty}\left(e^{\frac{-3}{3x+1}}\right)^{2x}=\lim_{x\to\infty}e^{\frac{-6x}{3x+1}}=e^{-2}=\frac{1}{e^{2}}\,.$$

Замечание. Конечно же, этот предел можно было вычислить и непосредственным применением второго замечательного предела, и заменой переменных, и по правилу Лопиталя. Но применением эквивалентной формы такой предел вычисляется намного быстрее и легче.

МАЛЫЙ ХАРАКТЕРИСТИЧЕСКИЙ ТРЕУГОЛЬНИК ПРАВИЛЬНОЙ УСЕЧЁННОЙ ПИРАМИДЫ

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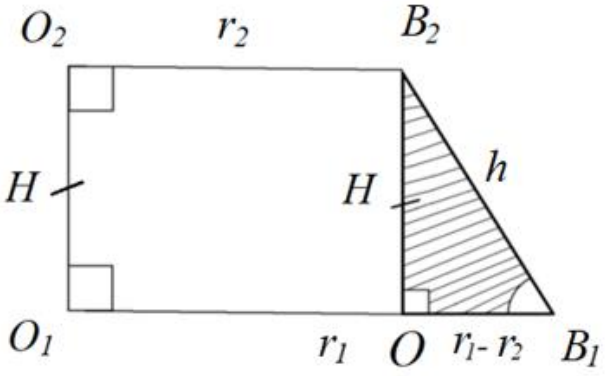
При решении правильной усечённой пирамиды с использованием апофемы автор данной статьи считает, что нет необходимости чертить всю усечённую пирамиду, и вместо этого предлагает рассмотреть так называемый малый характеристический треугольник, который содержит в себе все необходимые параметры, полностью характеризующие данную пирамиду

Напомним, что правильная усечённая пирамида - это такая пирамида, в которой:

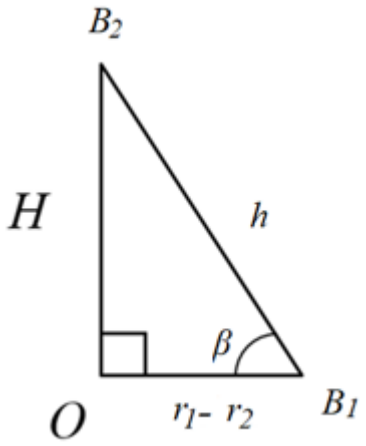
1) основаниями являются подобные правильные многоугольники;

2) высота, проведённая из геометрического центра верхнего основания усечённой пирамиды на нижнее основание, падает в геометрический центр нижнего основания, являющийся одновременно и центром окружности, описанной около основания, и центром окружности, вписанной в основание. Тем самым все апофемы будут равными и одновременно одинаково наклонёнными к нижнему основанию правильной пирамиды. Также все боковые грани будут одинаково наклонёнными к большему основанию усечённой правильной пирамиды, и одновременно все двугранные углы при большем основании усечённой правильной пирамиды будут равны. Однако равные и одновременно одинаково наклонённые к большему основанию пирамиды апофемы могут также быть и у усечённых пирамид с неправильными основаниями, в которые можно вписать окружности.

Упомянутый малый характеристический треугольник является характеристическим же треугольником прямоугольной трапеции, чья наклонная боковая сторона есть апофема пирамиды, вертикальная боковая сторона - это высота самой пирамиды, которая по определению падает в геометрический центр большего основания усечённой пирамиды, являющегося правильным многоугольником. Известно, что центр правильного многоугольника и есть центр вписанной в этот многоугольник окружности, поэтому основаниями прямоугольной трапеции являются радиусы вписанных в основания окружностей.



Итак, малый характеристический треугольник правильной усечённой пирамиды имеет следующий вид:



, где

O – точка, в которую опускается высота, проведённая из вершины меньшего основания на большее основание;

O_1 - центр окружности, вписанной в большее основание пирамиды;

O_2 - центр окружности, вписанной в меньшее основание пирамиды;

B_2 - одна из вершин апофемы на меньшем основании пирамиды;

B_1 - соответствующая вершина апофемы на большем основании пирамиды;

h - апофема пирамиды;

H - высота пирамиды;

r_1 - радиус окружности, вписанной в большее основание пирамиды;

r_2 - радиус окружности, вписанной в меньшее основание пирамиды;

β - одновременно и угол наклона апофемы к большему основанию пирамиды;

и угол наклона боковой грани к большему основанию пирамиды,

и двугранный угол при большем основании пирамиды.

В частности, малый характеристический треугольник правильной усечённой четырёхугольной пирамиды - это характеристический треугольник равнобокой трапеции, являющейся апофемным сечением этой пирамиды.

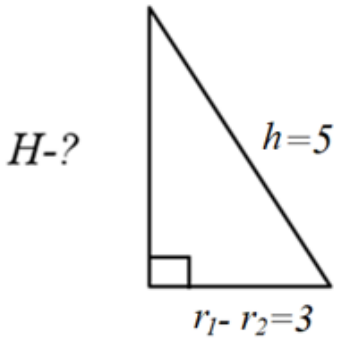
Таким образом, решив только малый характеристический треугольник, можно тем самым решить задачу на правильную усечённую пирамиду с участием апофемы.

Примечание. Малый характеристический треугольник можно применять не только к правильной усечённой пирамиде, но и к неправильной усечённой пирамиде с равными апофемами и одновременно с одинаково наклонёнными апофемами. Тогда в основаниях такой пирамиды могут лежать неправильные многоугольники, в которые можно вписать окружности. В частности, основаниями такой неправильной усечённой четырёхугольной пирамиды могут быть ромбы.

Наконец рассмотрим пример на решение правильной усечённой пирамиды с применением малого характеристического треугольника при участии апофемы рассматриваемой пирамиды.

Пример. В правильной четырёхугольной усечённой пирамиде стороны оснований равны 8 и 2, а апофема пирамиды 5. Найдите высоту пирамиды.

Решение. Основаниями данной пирамиды являются подобные квадраты. Радиусы вписанных в эти квадраты равны половинам соответствующих сторон и поэтому эти радиусы соответственно равны 4 и 1. Тогда $r_1 - r_2 = 4 - 1 = 3$. Применим малый характеристический треугольник правильной усечённой пирамиды:



По теореме Пифагора имеем: $H = \sqrt{5^2 - 3^2} = 4$.

ФОРМУЛЫ ПРОИЗВОДНЫХ АРКСИНУСОВ ОТНОШЕНИЯ ФУНКЦИЙ, А ТАКЖЕ ПРОСТОЙ И СЛОЖНОЙ ДРОБНО-ЛИНЕЙНЫХ ФУНКЦИЙ

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Ранее автором была выведена формула производной отношения функций, выраженной посредством определителя Вронского (вронскиана):

$$\left[\frac{y(x)}{z(x)}\right]' = -\frac{W[y(x);z(x)]}{z^2(x)}.$$

Теперь сначала займёмся нахождением производной арксинуса отношения некоторых функций *y(x)* и *z(x)* по правилу дифференцирования сложной функции:

$$\left[arcsin\ \frac{y(x)}{z(x)}\right]' = \frac{\left[\frac{y(x)}{z(x)}\right]'}{\sqrt{1-\left[\frac{y(x)}{z(x)}\right]^2}} = \frac{1}{\sqrt{1-\frac{y^2(x)}{z^2(x)}}} \cdot \frac{y'(x)\cdot z(x) - y(x)\cdot z'(x)}{z^2(x)} =$$

$$= \frac{z(x)}{\sqrt{z^2(x)-y^2(x)}} \cdot \frac{y'(x)\cdot z(x)-y(x)\cdot z'(x)}{z^2(x)}.$$

Итак, имеем:

1. $[arcsin\frac{y(x)}{z(x)}]' = \frac{y'(x)\cdot z(x)-y(x)\cdot z'(x)}{z(x)\sqrt{z^2(x)-y^2(x)}} = -\frac{W[y(x);z(x)]}{z(x)\sqrt{z^2(x)-y^2(x)}}$.

Пример 1. Найдите производную функции *f(x)* = $arcsin\frac{2x^3}{x^6+1}$ при условии $|x| < 1$.

Решение. Воспользуемся предложенной формулой:

$$f'(x) = \left(arcsin\frac{2x^3}{x^6+1}\right)' = \frac{(2x^3)'\cdot(x^6+1)-2x^3\cdot(x^6+1)'}{(x^6+1)\sqrt{(x^6+1)^2-(2x^3)^2}} =$$

$$= \frac{6x^2\cdot(x^6+1)-2x^3\cdot 6x^5}{(x^6+1)\sqrt{x^{12}-2x^6+1}} = \frac{6x^2\cdot(x^6+1)-2x^3\cdot 6x^5}{(x^6+1)\sqrt{x^{12}-2x^6+1}} = \frac{6x^2-6x^8}{(x^6+1)\sqrt{(x^6-1)^2}}$$

$$= \frac{6x^2(1-x^6)}{(x^6+1)|x^6-1|} =$$

$$= \frac{6x^2(1-x^6)}{(x^6+1)(1-x^6)} = \frac{6x^2}{x^6+1}.$$

Затем рассмотрим арксинус простой дробно-линейной функции:

$$f(x) = arcsin\frac{ax+b}{cx+d},$$ где

a, b, c, d – постоянные коэффициенты.

Найдём производную этой функции по предложенной автором первой формуле:

$$f'(x) = \left(arcsin\ \frac{ax+b}{cx+d}\right)' = \frac{(ax+b)'\cdot(cx+d)-(ax+b)\cdot(cx+d)'}{(cx+d)\sqrt{(cx+d)^2-(ax+b)^2}} =$$

$$= \frac{a(cx+d)-(ax+b)\cdot c}{(cx+d)\sqrt{(cx+d)^2-(ax+b)^2}} = \frac{acx+ad-acx-bc}{(cx+d)\sqrt{(cx+d)^2-(ax+b)^2}} = \frac{ad-bc}{(cx+d)\sqrt{(cx+d)^2-(ax+b)^2}}.$$

Итак, имеем

2. $$\left(arcsin\ \frac{ax+b}{cx+d}\right)' = \frac{\begin{vmatrix} a & b \\ c & d \end{vmatrix}}{(cx+d)\sqrt{(cx+d)^2-(ax+b)^2}} = -\frac{W[ax+b;cx+d]}{(cx+d)\sqrt{(cx+d)^2-(ax+b)^2}}$$, где

$\begin{vmatrix} a & b \\ c & d \end{vmatrix} = ad - bc$ есть определитель второго порядка, составленный из коэффициентов дробно-линейной функции.

Пример 2. Найдите производную функции *f(x) = arcsin* $(1 - \frac{1}{x})$.

Решение. Воспользуемся второй предложенной формулой:

$$f'(x) = \left(arcsin\frac{x-1}{x}\right)' = \left(arcsin\frac{1\cdot x+(-1)}{1\cdot x+0}\right)' = \frac{\begin{vmatrix} 1 & -1 \\ 1 & 0 \end{vmatrix}}{(1\cdot x+0)\sqrt{(1\cdot x+0)^2-(1\cdot x+(-1))^2}} =$$

$$= \frac{1\cdot 0-1\cdot(-1)}{x\sqrt{x^2-(x-1))^2}} = \frac{0+1}{x\sqrt{x^2-(x^2-2x+1)}} = \frac{1}{x\sqrt{2x-1}}.$$

Далее рассмотрим арксинус сложной дробно-линейной функции:

$$f(x) = arcsin\ \frac{a\cdot y(x)+b}{c\cdot y(x)+d},$$ где

a, b, c, d – снова постоянные коэффициенты; *y(x)* – некоторая другая функция. Найдём производную этой функции по предложенной автором первой формуле:

$$f'(x) = \left[arcsin\frac{a\cdot y(x)+b}{c\cdot y(x)+d}\right]' =$$

$$= \frac{[a\cdot y(x)+b]'\cdot[c\cdot y(x)+d]-[a\cdot y(x)+b]\cdot[c\cdot y(x)+d]'}{[c\cdot y(x)+d]\sqrt{[c\cdot y(x)+d]^2-[a\cdot y(x)+b]^2}} =$$

$$= \frac{a\cdot y'(x)\cdot[c\cdot y(x)+d]-[a\cdot y(x)+b]\cdot c\cdot y'(x)}{[c\cdot y(x)+d]\sqrt{[c\cdot y(x)+d]^2-[a\cdot y(x)+b]^2}} =$$

$$= \frac{(ad-bc)\cdot y'(x)}{[c\cdot y(x)+d]\sqrt{[c\cdot y(x)+d]^2-[a\cdot y(x)+b]^2}}.$$

Итак, имеем:

3. $$\left[\arcsin\frac{a\cdot y(x)+b}{c\cdot y(x)+d}\right]' = \frac{\begin{vmatrix} a & b \\ c & d \end{vmatrix}\cdot y'(x)}{[c\cdot y(x)+d]\sqrt{[c\cdot y(x)+d]^2-[a\cdot y(x)+b]^2}} =$$

$$= -\frac{W[a\cdot y(x)+b;c\cdot y(x)+d]}{[c\cdot y(x)+d]\sqrt{[c\cdot y(x)+d]^2-[a\cdot y(x)+b]^2}}$$

Пример 3. Найдите производную функции $f(x) = arcsin\frac{1-x^4}{1+x^4}$.

Решение. Воспользуемся третьей предложенной формулой:

$$f'(x) = \left(arcsin\frac{1-x^4}{1+x^4}\right)' = \left(arcsin\frac{(-1)\cdot x^4+1}{1\cdot x^4+1}\right)' =$$

$$= \frac{\begin{vmatrix} -1 & 1 \\ 1 & 1 \end{vmatrix}\cdot (x^4)'}{(1\cdot x^4+1)\sqrt{(1\cdot x^4+1)^2-((-1)\cdot x^4+1)^2}} = \frac{(-1-1)\cdot 4x^3}{(1+x^4)\sqrt{(1+x^4)^2-(1-x^4)^2}} =$$

$$= \frac{-8x^3}{(1+x^4)\sqrt{4x^4}} = \frac{-8x^3}{(1+x^4)\cdot 2x^2} = \frac{-4x}{1+x^4}.$$

Следует заметить, что предложенных автором формул в широкой математической литературе нет. Эти формулы позволяют быстро и легко находить вышеупомянутые производные.

ВЫВОД ДРУГИХ, БОЛЕЕ УДОБНЫХ ФОРМУЛ РАДИУСОВ ОКРУЖНОСТЕЙ, ВПИСАННОЙ В РАВНОБЕДРЕННЫЙ ТРЕУГОЛЬНИК И ОПИСАННОЙ ОКОЛО РАВНОБЕДРЕННОГО ТРЕУГОЛЬНИКА

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Известно, что в любой треугольник всегда можно вписать окружность, и радиус такой вписанной окружности обычно определяется из формулы $r = \frac{S}{p}$, где S – площадь треугольника, p – его полупериметр. Если принять, что a - основание равнобедренного треугольника, b - его боковая сторона, h - высота, опущенная на основание, то

$$r = \frac{\frac{1}{2}a \cdot h}{\frac{1}{2}(a+2b)} = \frac{a \cdot h}{a+2b} = \frac{a\sqrt{b^2 - \frac{a^2}{4}}}{a+2b} = \frac{\frac{1}{2}a\sqrt{4b^2 - a^2}}{2b+a} = \frac{1}{2}a\sqrt{\frac{2b-a}{2b+a}}.$$

Ранее эта же формула была получена автором без использования площади равнобедренного треугольника.

Однако данная формула трудно запоминается. В связи с этим автор предлагает более легкозапоминаемые варианты формулы радиуса вписанной в равнобедренный треугольник окружности:

$$r = \frac{a}{2} \cdot \sqrt{\frac{2b-a}{2b+a}} = \frac{a}{2} \cdot \sqrt{\frac{(2b-a)(2b-a)}{(2b+a)(2b-a)}} = \frac{a}{2} \cdot \sqrt{\frac{(2b-a)^2}{4b^2-a^2}} = \frac{a}{2} \cdot \frac{1}{2} \cdot \frac{|2b-a|}{\sqrt{b^2-\frac{a^2}{4}}} = \frac{a}{4} \cdot \frac{|2b-a|}{h}.$$

Но $2b > a \Rightarrow 2b - a > 0$, поэтому $|2b-a| = 2b-a \Rightarrow r = \frac{a(2b-a)}{4h} = \frac{2ab-a^2}{4h}$.

Окончательно имеем:

$$1. \quad \boxed{r = -\frac{a^2-2ab}{4h}},$$

где h – высота равнобедренного треугольника, определяемая по формуле $h = \sqrt{b^2 - \frac{a^2}{4}}$.

Последнюю формулу радиуса вписанной в равнобедренный треугольник окружности можно запомнить тем, что в числителе находятся первые два члена разложения квадрата разности $(a-b)^2 = a^2 - 2ab + b^2$.

Пример 1. Найдите радиус окружности, вписанной в равнобедренный треугольник с основанием 24 и боковой стороной 15.

Решение. $h = \sqrt{15^2 - \frac{24^2}{4}} = \sqrt{225-144} = 9 \Rightarrow r = -\frac{24^2-2\cdot24\cdot15}{4\cdot9} = -\frac{576-720}{36} = -\frac{-144}{36} =$ 4.

Можно также дать и другую версию формулы радиуса вписанной в равнобедренный треугольник окружности:

$$r = -\frac{a^2-2ab}{4h} = -\frac{(a^2-2ab+b^2)-b^2}{4h} = -\frac{(a-b)^2-b^2}{4h}, \text{ или}$$

$$2. \quad \boxed{r = \frac{b^2-(b-a)^2}{4h}}.$$

Эта формула также более или менее легко запоминается.

Пример 2. Найдите радиус окружности, вписанной в равнобедренный треугольник с основанием 24 и боковой стороной 15.

Решение. $h = \sqrt{15^2 - \frac{24^2}{4}} = \sqrt{225 - 144} = 9 \Rightarrow r = \frac{15^2-(15-24)^2}{4\cdot 9} = \frac{225-81}{36} = \frac{144}{36} = 4.$

Известно также, что около любого треугольника всегда можно описать окружность, и радиус такой описанной окружности обычно определяется из формулы $R = \frac{abc}{4\cdot S}$, где

S - площадь треугольника, a, b, c - его стороны. Если принять, что a – основание равнобедренного треугольника, b - его боковая сторона, h - высота, опущенная на основание, то

$$R = \frac{a \cdot b \cdot b}{4 \cdot \frac{1}{2} a \cdot h} = \frac{b^2}{2h} = \frac{b^2}{2\sqrt{b^2 - \frac{a^2}{4}}} = \frac{b^2}{\sqrt{4b^2 - a^2}} = \frac{b^2}{\sqrt{(2b - a)(2b + a)}}.$$

Ранее эта же формула была получена автором без использования площади равнобедренного треугольника.

Однако данная формула также трудно запоминается. В связи с этим автор предлагает более легкозапоминаемый вариант формулы радиуса описанной около равнобедренного треугольника окружности:

$$R = \frac{b^2}{\sqrt{(2b-a)(2b+a)}} = \frac{b^2}{\sqrt{4b^2-a^2}} = \frac{b^2}{2\sqrt{b^2-\frac{a^2}{4}}}.$$

Окончательно имеем:

3. $\boxed{R = \frac{b^2}{2h}}$.

Пример 3. Найдите радиус окружности, описанной около равнобедренного треугольника с основанием 24 и боковой стороной 15.

Решение. $h = \sqrt{15^2 - \frac{24^2}{4}} = \sqrt{225 - 144} = 9 \Rightarrow R = \frac{15^2}{2\cdot 9} = \frac{225}{18} = \frac{25}{2} = 12{,}5.$

НАВЧАЛЬНИЙ ТРЕНІНГ НА УРОКАХ ІНОЗЕМНОЇ МОВИ

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Стрімкі темпи сучасного життя, величезна кількість інформації, інтелектуальне навантаження та необхідність постійного вдосконалення знань та розвитку особистості, призводять до того, що сучасним педагогам необхідно вміти подавати нову об'ємну інформацію коротко, чітко та цікаво для учасників навчального процесу, інтенсифікувати сам процес вивчення іноземної мови.

Тренінг – це форма соціально-педагогічної діяльності, спрямована на набуття життєвої компетентності шляхом збагачення як знаннями, так і життєво-практичним та емоційно-особистісним досвідом завдяки використанню інтерактивних засобів навчання, які сприяють та поглиблюють процес підготовки спеціалістів. Освітній тренінг - це оптимальний спосіб створення суб'єктам освітнього процесу можливостей для надання й отримання соціально значимої інформації, поповнення та поновлення знань, формування ставлень, умінь і навичок, що забезпечується шляхом послідовної реалізації впорядкованих, взаємопов'язаних дій, які базуються на певних принципах, у спеціально створюваних умовах.

Назву «технологія» процес діяльності отримує тільки тоді, коли його прогнозовано, визначено кінцеві властивості продукту та способи його отримання, цілеспрямовано сформовано умови для реалізації та надано хід процесу, а результат, що отримали в кінці, максимально відповідає очікуваному зразку, що можна діагностувати [2, с. 178].

Сьогодні дуже популярними є інтерактивні технології навчання, до яких віднесено і тренінг. Терміни «інтерактивний», «інтеракція» використовуються досить часто в контексті описання контактів людини і нових інформаційних систем.

Ми припускаємося думки про те, що так підкреслюється можливість людини не пасивно сприймати інформацію, а брати участь у розв'язанні певних проблем, формуванні певної думки, для прийняття певних рішень тощо.

Уважаємо, що в процесі вивчення іноземної мови саме інтерактивні методи та технології навчання здатні забезпечити не лише швидке засвоєння іншомовної лексики, сприйняття іншомовного матеріалу і носіїв мовлення, а й розвивати вміння висловлюватися, формувати власні думки, відстоювати свою позицію, виробляти власні судження, прогнозувати бажані результати і створювати умови для їх досягнення, адже (за визначенням Т.І. Коваль) інтерактивні технології навчання іноземних мов – це цілісна та інтегративна система процесу навчання, яка передбачає найраціональніше застосування відібраних за принципами комунікативності, доцільності впровадження та взаємного доповнення інтерактивних методів, прийомів, засобів і форм навчання іноземних мов із метою досягнення заздалегідь запланованого (бажаного) навчального результату [5, с.87].

У тренінгу широко використовуються методи, спрямовані на стимуляцію взаємодії учасників. Усі вони об'єднуються під назвою «інтерактивні техніки» і забезпечують взаємодію та власну активність учасників під час динамічного навчального процесу. Такий вид роботи, як правило, застосовується: під час початкового привітання та вступної частини щоденних занять; коли треба вислухати одного або декількох промовців, зокрема під час проведення колективної презентації перед аудиторією; під час обміну результатами роботи, виконаної у складі малих груп; наприкінці тренінгу для підбиття підсумків і завершення заняття. Переваги групової роботи полягають у тому, що з інформацією та досвідом можуть ознайомитися всі члени групи. Окрім того, існує можливість легко давати інструкції одразу всім учасникам. Важливо також, що окремі учасники неспроможні

відразу брати активну участь у навчанні, відчувають обмеження можливостей засвоєння матеріалу, їм легше адаптуватися до умов тренінгу у великій групі.

На нашу думку, тренінги мають велику перспективу застосування в процесі навчання іноземної мови студентів. Серед переваг, які має тренінг як активна форма навчання, можна визначити такі: тренінг, побудований (повністю чи частково) на моделюванні ситуацій професійної діяльності учасників тренінгу та спрямований на формування умінь і навичок, необхідних у практичній роботі; тренінги передбачають виконання індивідуальних і групових практичних занять, проведення рольових ігор; тренінг дає можливість студентам систематизувати набутий досвід, окреслити шляхи особистісного саморозвитку; тренінг сприяє встановленню демократичного стилю спілкування, забезпечує суб'єкт-суб'єктний процес навчальної діяльності; тренінг формує у студентів практичні навички до виконання індивідуальних завдань і публічної презентації результатів своєї роботи, навчає ефективно працювати в команді; тренінг розвиває лідерські якості, ініціює активність студентів.

Застосування тренінгових технологій передбачає залучення студентів до навчального процесу, активізує міжособистісну комунікацію, яка забезпечує ефективний обмін інформацією у ході творчої дискусії. Своєю чергою, це сприяє розвитку у студентів аналітичного мислення і виробленню навичок прийняття рішень у ситуаціях, максимально наближених до реальності.

Тренінгові технології сприяють: розвитку сили волі, цілеспрямованості студентів, адаптації їх до напруженої праці та самовдосконалення; формуванню позитивного ставлення до професії вчителя; виявленню сильних та слабких боків кожної особистості; формуванню почуттів обов’язку та відповідальності; співставленню запланованих цілей із власними можливостями та навчанню способів поведінки, типових для людини з високорозвиненою мотивацією.

Найдоцільніше та найефективніше проводити тренінг з учнями\студентами старшої школи, адже у студентів\старшокласників вже складаються певні принципи поведінки, формується образ власного «Я», свої ціннісні орієнтації. Чітко виявляється диференціація інтересів. Ставлення до дисциплін стає більш вибірковим. Оскільки у студентів\учнів старшої школи з особливою силою проявляється прагнення до самоствердження, самовираження, до можливості відстоювати свої погляди та переконання, то саме комунікативна спрямованість навчання ІМ і створення сприятливого психологічного клімату для спілкування є тими чинниками, які на цьому етапі мають особливу значущість. У старшій школі стає ще більш актуальним поєднання індивідуальної, парної та групової роботи, де вчитель виступає у ролі партнера, організатора, режисера, сценариста тощо.

Під час підготовки уроку-тренінгу з іноземної мови у старшій школі ми пропонуємо використовувати такі етапи.

Перший етап – ознайомчий. На цьому етапі потрібно зробити аналіз психолого-педагогічної літератури, проаналізувати види тренінгів, тренінгові техніки, структуру тренінгу, виокремити найбільш ефективні прийоми активізації пізнавальної активності студентів, які повинні бути включені до тренінгів, протестувати студентські інтереси та вподобання, проаналізувати необхідні умови для організації тренінгу тощо.

Другий етап – підготовчий. На цьому етапі потрібно проаналізувати зміст тренінгу. Складаючи зміст кожного тренінгу, необхідно спиратися на те, щоб він був максимально наближеним до потреб та проблем учасників; ураховувати рівень їх актуального розвитку і завдання найближчого розвитку; орієнтуватися на формування необхідних знань, умінь і навичок.

Також на другому етапі підготовки до проведення тренінгу на занятті з іноземної мови потрібно підібрати найбільш доцільні тренінгові техніки, які полегшують процес відвертого і доброзичливого спілкування учасників. Ми пропонуємо такі тренінгові техніки, що підходять для роботи зі студентами на заняттях з іноземної мови: робота в групах, інтерактивні презентації, опитування думок, мозкові штурми, рольові ігри, аналіз

історій і ситуацій, дебати, дискусії, виконання проєктів, творчі конкурси, використання комп'ютерних технологій тощо.

Третій етап – створення уроку-тренінгу. Вибір теми уроку, планування мети, цілей, етапів, форм та методів навчання, інтерактивних технік тощо.

У контексті впровадження компетентнісної парадигми освіти тренінгові технології є ефективними та перевіреними інструментами роботи викладача в умовах інтенсифікації та економії аудиторного часу. Тренінгові технології на заняттях з англійської мови розуміємо як такі, що дозволяють створити умови для саморозкриття особистості студента з метою реалізації його комунікативних компетентностей у змодельованих ситуаціях майбутньої професійної діяльності. Вивчення англійської мови за допомогою тренінгових технологій допомагає забезпечити набуття студентами комунікативних англомовних, загальнокультурних, навчально-пізнавальних компетентностей. При цьому роль і функції викладача можна визначити загальним поняттям коуч, що включає в себе широкий набір функцій та особистісних рис.

Тож перспективними напрямами подальших наукових розвідок вбачаємо висвітлення методичних питань щодо впровадження зазначеної технології в навчальний процес задля забезпечення комунікативної складової підготовки майбутніх фахівців.

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