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UNDERSTANDING THE SOCIAL SCIENCES

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Abstract. Old age is difficult to define, so many terms overlap or clash with each other, all of which raise a number of issues: the elderly, the third age, the fourth age, pensioners, etc. It is not easy to determine the threshold for entering the period of life commonly known as old age. One thing is certain, old age has changed profoundly. From now on, it has become for everyone, albeit with profound inequalities, a normal stage of life. Social security systems combined with the considerable progress in medicine have made it possible to increase the length of retirement. Whereas in 1950 a man retiring at 65 could expect to live for about 12 years, today life expectancy at 60 is over 20 years for men and over 25 years for women. However, this simple observation has much more complex consequences in terms of the social identity, integration and social behaviour of these new population groups. Despite an ageing population, Switzerland has a total labour force of 4.706 million people. In the fourth quarter of 2019, the participation rate of the population aged 15 and over was 68.1%. This puts the country in second place in Europe behind Iceland (79.9%). Switzerland's neighbouring states have significantly lower levels (Germany: 62.6%, Austria: 61.4%; France: 55.5%, Italy: 49.9%). In particular, Switzerland has one of the highest rates of employed women in Europe. The percentage of employed women increased significantly between 2010 and 2019, from 56.9% to 60%.

Keywords: *Science, social science, social intelligence, embeddedness, economic imperialism, social research, empirical social research, sociology, ageing and sociology, economic sociology, sociability.*

Rezumat. Bătrânețea este dificil de definit, astfel încât mulți termeni se suprapun sau se ciocnesc între ei, toți ridicând o serie de probleme: vârstnici, bătrâni, vârsta a treia, vârsta a patra, seniori, pensionari, persoane în vârstă etc. fiind uşor de determinat pragul de intrare în perioada de viață cunoscută în mod obișnuit sub numele de bătrânețe. Un lucru este cert, bătrânețea s-a schimbat profund. De acum înainte, ea a devenit pentru toată lumea, deși cu profunde inegalități, o etapă normală a vieții. Sistemele de securitate socială, combinate cu progresele considerabile ale medicinei, au făcut posibilă creșterea duratei de pensie. Dacă în 1950 un bărbat care se pensionează la 65 de ani se poate aștepta să trăiască aproximativ 12 ani, astăzi speranța de viață la 60 de ani este de peste 20 de ani pentru bărbați și de peste 25 de ani pentru femei. Această simplă constatare are însă consecințe mult mai complexe în ceea ce privește identitatea socială, integrarea și comportamentul social al acestor noi

grupuri de populație. În ciuda îmbătrânirii populației, Elveția are o forță de muncă totală de 4.706 milioane de persoane. În al patrulea trimestru din 2019, rata de participare a populației cu vârsta de 15 ani și peste a fost de 68,1%. Aceasta plasează țara pe locul al doilea în Europa, după Islanda (79,9%). Statele vecine ale Elveției au niveluri semnificative mai scăzute (Germania: 62,6%, Austria: 61,4%; Franța: 55,5%, Italia: 49,9%). În special, Elveția are una dintre cele mai ridicate rate de femei angajate din Europa. Procentul de femei angajate a crescut semnificativ între 2010 și 2019, de la 56,9% la 60%.

Cuvinte cheie: *Ştiinţă, ştiinţă socială, inteligenţă socială, dereglementări ale pieţelor, imperialismul economic, cercetarea socială empirică, sociologia, îmbătrânirea şi sociologia, sociologia economică, sociabilitate.*

Introduction

The term *sciences* is a collective term for all those scientific disciplines that deal with the phenomena of people living together in society [1]. Social sciences are also referred to as social sciences [2]. The word sociology is derived from both Latin and Greek origins. The Latin word socius, “companion”; the suffix -logy “the study of” from Greek λόγος, lógos, "word", “knowledge”. It was first coined in 1780 by the French essayist Emmanuel-Joseph Sieyès (1748 – 1836) in an unpublished manuscript. Sociology was later defined independently by the French philosopher of science, Auguste Comte (1798 – 1857) in 1838 as a new way of looking at society.

Classically, the following disciplines are counted among the social sciences: Anthropology (social and cultural anthropology) and social philosophy, social ethics [3], social history, social psychology, sociology [4], pedagogy, educational science incl., empirical social research [5], population science, ethnology (study of peoples), anthropogeography, art science, cultural studies, religious studies, religious education, law (jurisprudence) [6], political science, media studies, communication studies, linguistics , economics.

With regard to the methods and approaches used, there are overlaps between the social sciences, the humanities and the natural sciences. However, while the social sciences focus on the processes of human coexistence, the humanities are concerned with the cultural products of human existence, such as language, philosophy and mathematics. In contrast, the view of the natural sciences can be characterized as object-oriented. They try to explain the interrelationships, the structure and the emergence and decay of inanimate and animate nature.

Associated disciplines: Classically, the following disciplines are counted among the social sciences: Anthropology (social and cultural anthropology) and social philosophy, social ethics [3], social history, social psychology, sociology [4], pedagogy, educational science incl. pedagogy, empirical social research [5], population science, ethnology (study of peoples), anthropogeography, art science, cultural studies, religious studies, religious education, law (jurisprudence) [6], political science, media studies, communication studies, linguistics, economics.

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oriented. They try to explain the interrelationships, the structure and the emergence and decay of inanimate and animate nature.

Many people probably like to consume the results of (pseudo-scientific) empirical survey studies in their results of (pseudo-scientific) empirical survey studies. For example, you could take part in a survey on space tourism on the internet pages of New York Times and answer the following question: "With SpaceShipOne the first privately financed space plane has flown into orbit. Now spaceports are being built in the USA or Australia are planned. Off-the-wall tourism plans or realistic market niche?"

After casting one's own vote to answer this question one learns that 27 percent of the visitors to this website who are willing to answer think that space tourism is environmental pollution, space tourism is pollution and a waste of money. This should be banned or restricted. 54 percent of the 268 people who have voted so far think space tourism is a holiday option for wealthy adventurers and is not affordable for ordinary people. In the end 19 per cent of the participants voted for the statement, "A trip to outer space into space is dreamlike and also results in new opportunities for the tourism industry."

Slightly fewer people have also professionally - and that should mean at this point more seriously - with results from empirical studies. For the latter group of people in particular, it is important to know exactly how such data has been and what they can tell us. Four seemingly trivial examples will show what a data consumer has to reckon with.

Social intelligence

Social intelligence or interpersonal intelligence is the form of intelligence that allows us to understand others (their thoughts, feelings) and to act effectively on them (obtain their support, modify their behaviour) in situations of social interaction.

Basically, social intelligence is a form of intelligence that allows you to understand others and to interact with them adequately (depending on what you want them to do or be).

The goal of the human and social sciences

The goal of the human and social sciences is to scientifically investigate such issues and, in this way, to arrive at the most reliable knowledge possible [7]. Since social facts are elements of our perceptible experiential reality, the human and social sciences are empirical sciences; they are based on the systematic collection, processing and analysis of empirical data, i.e. of information about the reality of experience (e.g. test scores, physiological measurements, interview recordings, observation protocols).

Development

The study of the developmental dynamics of capitalist society was at the centre of sociology during its founding phase as an academic subject (1890 - 1920). Émile Durkheim[1], Karl Marx[2], Georg Simmel[3] and Max Weber. Weber developed social theories that focused on the interplay of economy, culture and social structure. In parts, these theories are closely related to the institutionalist theory of the Historical School.

[1] 1893: Sociologist Émile Durkheim outlines the idea of social order maintained by organic and mechanical solidarity in *The Division of Labor in Society*.

[2] 1848: In *The Communist Manifesto*, Karl Marx and Friedrich Engels lay out the effects of capitalism on society.

[3] Philosophe et sociologue allemand, atypique et hétérodoxe, Georg Simmel dépasse les clivages, pratiquant l'interdisciplinarité.

With the formalisation of neoclassical economic theory in the 1920s and 1930s, a division of labour was established between sociology and economic theory, in which sociology dealt primarily with narrowly defined peripheral areas of the economy. The American sociologist Talcott Parsons (1903 - 1979) imagined the division of labour between the two subjects in such a way that economics dealt with the universal principle of the ends-means relationship in individual action, while sociology sought the origins of these ends in social values. This idea fitted very well with post-war Western capitalist societies, in which the economy appeared as a politically controllable apparatus for the fulfilment of politically set overall social goals. Economic sociologists in the post-war period concentrated primarily on the analysis of the Taylorist organisation of work in companies, the shaping of industrial relations, and the institutional regulation of industries and sectors.

With the crisis of Keynesian macro-control and the beginning deregulation of markets at the end of the 1970s, however, questions about the functioning of markets, the dynamics of competition and the decision-making processes of companies returned to the centre of sociology. This coincided with a crisis of the neoclassical paradigm within economic theory: the standard macroeconomic models offered hardly any explanations for the observed stagflation and the increasingly forced crisis dynamics. From a microeconomic perspective, challenges such as the principal-agent problem, moral hazard and information asymmetries arose. Paradoxically, this crisis of post-war economic theory was accompanied by the expansion of economic thinking in sociology: the economics-inspired rational choice model penetrated into the most diverse fields of sociology. This "economic imperialism" prompted sociologists to counter-react: in dealing with economic phenomena, they wanted to show that the economic model of action already had considerable deficits in explaining its genuine subject area, the economy. With this, however, sociology began to transcend the demarcation of the two disciplines drawn by Talcott Parsons and to deal with the core of economic phenomena again. Based on empirical data, Parsons' social action theory was the first broad, systematic, and generalizable theory of social systems developed in the United States and Europe.

In the USA, the renaissance of economic sociology first became apparent in network and organisational research. The concept of "embeddedness", coined in an influential essay by Mark Granovetter, gained central importance for the new economic sociology, capturing the constitutive connection of economic action with network structures, cognitive patterns and political institutions. In Europe, the renaissance of economic sociology only began in the 1990s. Since then, it has been one of the fast-growing fields of sociology attracting considerable attention.

Observation of a culture or group in its natural setting has long favoured the method of social research. Often associated with anthropology and sociology, researchers have used observation in a variety of settings, from foreign cultures to school classes. By interacting with members of a group or society and participating in its activities and rituals, researchers can study social phenomena from the perspective of an outsider and insider. Because of the nature of social science research, observations occur as part of field research, rather than in a laboratory setting. Observation yields rich descriptive data, but must be carried out with care. One of the major concerns of observation is whether subjects, knowing that they are being observed, change their behaviour or activities.

Statistical Experiments

To add scientific rigor to social research, sociologists, political scientists, and others have performed complex statistical analyses in their research, either collecting their own data or using data sets from government agencies or other organizations. Popular social research datasets include the American National Election Studies, the National Longitudinal Survey of Youth, and various types of economic data collected by the U.S. Department of Commerce and the Bureau of Labor Statistics. These and other datasets help researchers use empirical data to test hypotheses and draw conclusions based on quantitative data. Researchers who use data collected by government agencies and others, however, should exercise caution, as these data were likely collected for purposes different from those for which the researcher is using the data.

Empirical Research

Empirical research cannot be learned by reading books alone. Practical experience in dealing with the instruments of empirical social research cannot be replaced by any textbook, no matter how complete and detailed.

Students of the social sciences or humanities acquire a wide variety of knowledge and skills, depending on the discipline. Independent of all subject content, academic education always also pursues the goal of enabling students to understand, assess and produce scientific knowledge themselves. Methodological competence is necessary for this active participation in gaining scientific knowledge. Because without research methods, science is not possible.

Empirical social and human research is concerned with social and human circumstances, i.e. with the behaviour, experience and coexistence of people as well as with physical and mental characteristics of the human being. In this context, "human" and "social" are not positive-values, but neutral-descriptive terms that refer to the human and the interpersonal.

Questions that are investigated are, for example:

● What are the correlations between personality traits on the one hand and career success on the other?

● Are only children more selfish than siblings? And if so, how does this effect come about?

● Does mammography screening make sense for the early detection of breast cancer, or do misdiagnoses and side effects of the procedure predominate?

● What knowledge and what attitudes towards stem cell research exist in the population of different European countries?

● How widespread is hyperactivity among children and

● How widespread is hyperactivity among children and adolescents in Germany and how is it successfully treated?

● Which campaigns and measures against cigarette smoking are particularly effective and efficient?

● Does the use of violent video games increase aggressiveness?

● What influence do global financial crises have on the prestige of the economic elite?

Empirical Data

"Empirical data" is information about the reality of experience that is specifically selected and documented with regard to the research problem. They are with scientific data collection methods (observation, interview, questionnaire, psychological test, physiological measurement, document analysis) using corresponding standardised or non-standardised data collection instruments (observation plan, interview guide, questionnaire, measuring device, etc.). Meaningful data are only meaningful if they are used within the framework of a research process and research design appropriate to the research problem

The data are only meaningful if they have been collected on a suitable sample (or on the entire population) within the framework of a research process and study design appropriate to the research problem, if they have been evaluated appropriately and if they have been interpreted in a theory-related manner.

Ageing and Retirement

"Old age is not just a word" [8]. Far from being a simple biological fact, it is analysed by the sociologist as a true social and historical construct. In order for old age to become one of the stages in the life cycle, retirement had to be institutionalised, as a new age of life [9] could then take shape outside the labour market. If the "old" are all pensioners, this category is no less disparate, hence the flowering of new expressions: senior citizens, dependent elderly. The words to say it are obviously heavy with meaning. "Senior" is a term invented by marketing to segment and energize the youngest and most solvent part of the group! "Dependent elderly" refers to a medical judgement. And the fourth age is added to the third with the increase in life expectancy. Finally, we are interested in ageing from an individual point of view, adopting a micro-sociological perspective. Ageing can then be approached as a non-linear process, "a combination of commitments and disengagements", but also as an experience. And the ultimate experience is that of death, the last stage of life still too little explored by sociologists.

Ageing and Sociology

Regardless of the usual assumptions for mortality, fertility and migration, the population of metropolitan France will continue to age at least until 2050. The number of people would grow all the more as age increases: almost tripling for those aged 75 or over and quadrupling for those aged 85 or over. In 2050, one in three inhabitants will be aged 60 or over, compared with one in five in 2005. The proportion of young people capable of being professional and/or family careers would decrease, as would that of people of working age. Old age is difficult to define, so many terms overlap or clash with each other, all of which raise a number of issues: the elderly, the third age, the fourth age, senior citizens, pensioners, etc. It is not easy to determine the threshold for entering the period of life commonly known as old age. One thing is certain, old age has changed profoundly. From now on, it has become for everyone, albeit with profound inequalities, a normal stage of life. Social security systems combined with the considerable progress in medicine have made it possible to increase the length of retirement.

Society and Ageing

Parallel to this evolution, the sociological viewpoint has changed. Thus, old age is no longer spoken of as a state but as a process [8]. The ageing of the population is accompanied

by the isolation of older people and a change in society that public policies must address in a comprehensive manner. The increase in life expectancy is reflected in a sharp rise, at the end of the last century, in the number of older people living alone. This increase is particularly strong at older ages, 80 years and over. The scale of this phenomenon is explained by the changing family situations due to mortality: the death of a spouse in an elderly couple whose children have left usually leaves the surviving spouse alone. Finally, the growing autonomy of older people, made possible by improved health conditions, enables them to stay longer in their homes and to delay their departure into institutions. The proportion of single people rises from just over 20% for those aged 65-69 to 30% for those in their seventies, reaching a peak with over 40% for those in their eighties.

Economic Sociology

Economic sociology views economic action as a form of social action [10]. In contrast to modern economic theory, it does not start from the model of the individual's calculation of utility. Rather, economic decisions and transactions are shaped by social influences and collective patterns of interpretation. From the point of view of economic sociology, social origins, norms, routines, networks, organisations and institutions do not only enter into the rational calculation of economic actors as costs, but also create the actors' orientation for action. Accordingly, markets and companies are not understood as aggregations of individual decisions, but as social orders with formative power for economic action [11]. The economic sociological critique of the basic theoretical assumptions of the standard model of economic theory builds on this.

Sociability

The relationships of senior citizens are marked by advancing age, cessation of activity, the arrival of grandchildren and changes in health status. All these factors gradually modify the contacts they have with their loved ones. Between the ages of 65 and 70, with the growing number of grandchildren, the relationship with the descendants becomes even more intense. The few contacts maintained with colleagues weaken, relations with shopkeepers are maintained and neighbourhood relations are slightly strengthened. From the age of 70 onwards, friendships diminish under the natural effect of the death of relatives and more limited activity. In addition, the weight of physical handicaps and dependency become more and more penalizing. After the age of 80, friendly and neighbourly contacts diminish significantly [12]. With the loss of autonomy, the over-85s even reduce their relations with shopkeepers and their service relationships. Contacts are concentrated on an increasingly limited number of interlocutors. Only family relationships are maintained.

Asserting that ageing and retirement are primarily social problems does not mean that they are not self-evident. Such a stance must be based on a foundation, otherwise the subsequent analyses will be erroneous and interventions will be out of date. In a first time, it is necessary to define what a social problem is; how a problem is a social problem; and how it can be solved, if it can be qualified as social; then put *ageing* and retirement into the framework of this problematisation; finally, to consider the practical consequences of this definition and this inclusion in the social resolution, of social intervention and the training of social actors.

The difficulties linked to the age structure are as many as the social problem's amounts; and asserts that economic and social marginalization of a majority of early retirees and pensioners. It finds its origin and its social explanation in the accumulation of inferior

social positions of exploitation; plus domination at work and in other areas of activity and life by these pluses 50 years old.

The character of the individual or the quality of his or her education will make their influence felt. However, these are aggravating factors and not explanatory factors: highlighting them would mean ignoring and obscuring the priority social aspect of these problems, thus depriving oneself of the means for a sound analysis and moving away from the paths of effective intervention.

To pose a social problem is tantamount to criticising the social reality that structures and maintains it. What makes a social problem is in itself problematic? Let us take the example of retirement conditions: for all those who have worked and lived - not by choice, but more often than not with their bodies defending them - in social positions of greater exploitation and more secure subjugation, and even if retirement sounds to their minds like a deliverance and a reward, the definitive departure from work is nonetheless, socially speaking, an irremediable expulsion of an ageing workforce deemed less competent and less recyclable, especially less profitable on the labour market [13]. In a society where work is a central factor of social integration, retirement thus sanctions their social disqualification and leads them to the margins of exclusion.

Socially explaining the problems and denouncing their seriousness is not enough; it is also necessary to work on their social solution [14, 15]. A social problem cannot be solved by purely technical means, by simple organisational arrangements or means. Socially explaining problems and denouncing their seriousness is not enough; it is also necessary to work on their social solution. A social problem cannot be solved by purely technical means, by simple organisational arrangements or means.

Vieillissement and Retirement

The succession of policies for the social management of ageing and retirement must also be analysed from the point of view of the instituted effect of social relationships, beyond the techniques of defined and drowing up programmes [1, 16].

Gerontological intervention, far beyond its methodological variants, technical forms and immediate results, will not produce the same social effects, depending on the forms and orientations that its agents favour and on the types of social relations in which it is developed and engaged [17, 18].

Conclusion concerning vieillissement and retirement

The succession of policies for the social management of ageing and retirement must also be analysed from the point of view of the instituted effect of social relationships, beyond the techniques of defining needs and drawing up programmes.

Gerontological intervention, far beyond its methodological variants, technical forms and immediate results, will not produce the same social effects, depending on the forms and orientations that its agents favour and on the types of social relations in which it is developed and engaged.

New developments

Of course, there are always new developments within the constantly (and in recent years even rapidly) growing field of qualitative and interpretative interpretative social research. That would argue for new introductions [9, 12]. But this natural growth and almost inevitable differentiation of the field of the field require, first and foremost, revised new

editions of the already existing existing introductions, but not yet necessarily a new work. If I despite this comfortable situation, this contribution is another introduction to the theory and practice of qualitative social research (which is not a real introduction in the conventional sense of the word), then for the following reasons:

Firstly, much of what is relevant for the practice of qualitative and interpretative research, if one wants to do it oneself, is often neglected in these introductions, or not dealt with at all in the existing introductions (e.g. history data protection; subjectivity; difference between qualitative, interpretative, reconstructive; comparison of methodological practices etc.) [7].

Secondly, the existing introductions, however competent and comprehensive as they are in detail, are too much and demanded by publishers) to the requirements. This means: they formulate their descriptions mainly in the indicative! In addition, they give the reader a wealth of tips and advice, but also normative guidelines that are ostensibly not part of the author's respective theoretical self-understanding of the author(s), but are anchored in science itself - so the implicit assertion. The impression then arises as if these descriptions and guidelines were self-explanatory, as if all this represented an unquestionable basic knowledge of qualitative and interpretative social research. In this way, these introductions create certainties where sowing doubts would be more appropriate (which, in my opinion, is the task of science) [14, 19]. The historical and theoretical conditionality of the respective individual presentations is not only made visible, but rather concealed, which has the effect of the impression is created that there is a secure body of knowledge within qualitative and qualitative and interpretative social research. Secured knowledge, on the other hand, only exists within a certain theoretical and/or methodological perspective [20].

The third reason for presenting here another view on qualitative and interpretative social research, albeit different. The existing introductions tend to be more theoretical generally determine practices and catalogue the practices of qualitative social research, present case studies, on the basis of which they plausibilise selected problems of qualitative and interpretative social research [15, 21]. A combination of theoretical discussion and practical interpretative work has (in my view) not yet been really succeeded. Here, I venture a new attempt, even at the risk of also failing, as well. This attempt is made from a sociological perspective, which belongs to the theoretical program of communicative constructivism. Methodologically, from the point of view of an interpretative, hermeneutic social research.

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THE PHENOMENON OF CONSCIOUSNESS FROM AN INTER AND MULTIDISCIPLINARY PERSPECTIVE

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Abstract. Contemporary science, in recent decades, reflects intensely on the phenomenon of consciousness. This fact is due to the accelerated development of cognitive sciences, biological and physical sciences, neuroscience, which have achieved certain successes in researching the problem of mind-body, consciousness. However, what is strictly required is the issue of the possibility of a scientific theory of consciousness, which would apply a new research methodology. The most recent approaches in this direction substantiate the need for research from a phenomenological structural perspective, which explains consciousness as a phenomenon determined by the subquantum level. Structural-phenomenological theory holds that this level is a profound reality regulated by specific principles and laws that make consciousness possible.

Keywords: *consciousness, conscious, Computer Sciences, Cognitive Sciences, theory of information integration, Turing machine.*

Rezumat. Știința contemporană, în ultimele decenii, reflectă intens asupra fenomenului conștiinței. Acest fapt se datorează dezvoltării accelerate a științelor cognitive, științelor biologice și fizice, neuroștiințelor, care au obținut anumite succese în cercetarea problemei minte-corp, conștiință. Totuși, ceea ce se cere strict este problema posibilității unei teorii științifice a conștiinței, care să aplice o nouă metodologie de cercetare. Cele mai recente abordări în această direcție fundamentează necesitatea cercetării dintr-o perspectivă structurală fenomenologică, care explică conștiința ca fenomen determinat de nivelul subcuantic. Teoria structural-fenomenologică susține că acest nivel este o realitate profundă reglementată de principii și legi specifice care fac posibilă conștiința.

Cuvinte cheie: *conștiință, conștient, Informatică, Științe cognitive, teoria integrării informației, mașină Turing.*

Introduction

One of the main concepts of philosophy, from antiquity to the present day, is consciousness - which means the faculty of the mind to react to external and internal stimuli, to make knowledge possible. Problems related to consciousness in philosophy have always

referred to how a subject can become the object of his own observation and whether any mental state is necessarily accompanied by consciousness. In contemporary philosophy the concept of consciousness is used with the following meanings: one of the meanings refers to self-knowledge (introspection), another meaning highlights a general property of mental states (cognition) and a third retains a hedonistic or utilitarian meaning, and moral sense, i.e. the ability to qualify an action as moral or immoral.

The theme of "consciousness" has become extremely important for science, technology, contemporary philosophy, and this is due to the accelerated development of Computer Science and Artificial Intelligence (AI). Based on these, some researchers support, from a methodological perspective, the assertion that consciousness is a specific physical process of the brain. Others believe that it is beyond the physical and cannot be revealed by current science, and can be known by an extended future science. This type of confrontations obviously has a philosophical dimension, related to establishing the nature of consciousness.

The great discoveries of the twentieth century such as: relativity, Quantum Mechanics, Genetic Biology, Neurophysiology, Computer Science, Artificial Intelligence are the reasons why consciousness has become one of the main concerns of science. However, the attempts to scientifically explain consciousness have so far failed. As a result, it was concluded that the problem of consciousness involves an effort in which various sciences must participate (Physics, Biology, Psychology), but also philosophical and theological thinking. The concept of "consciousness" is in the spotlight today due to the problems that have arisen in a new type of science: Computer Sciences and Cognitive Sciences.

Inter and multidisciplinary research and theories of the phenomenon of consciousness

Cognitive sciences, in close connection with cybernetics and AI, have given rise to new philosophical problems and approaches. Cybernetics, as a science, was achieved due to the study of thought patterns and of human action principles, which were mathematized. The cognitive sciences, in their evolution, have moved from the mathematical models and cyber languages of AI to models that reflect the functioning of the mind and the connection with the physical in the case of human consciousness. Today, in the cognitive sciences, the neural approach is being developed and it draws a parallel between computer programs and brain processes, finding that neurobiological research on the brain can lead to results that would facilitate the explanation of mental and conscious phenomena. This approach reveals divergences between those who consider consciousness to be a limit of science and those who claim that it is the object of scientific knowledge.

The theory of identity between mind and brain considers consciousness a mental phenomenon produced by the brain. In this way the dualism between consciousness and matter is excluded, but the problem related to the capture of the quality (feelings) of consciousness, of its qualitative specificity that remains ineffable, is preserved. To claim that statements about consciousness are statements about brain processes is obviously false. In the direction of avoiding reductionist materialism, the idea of consciousness without corporeality is supported. Proponents of this concept make an extension of the forms of consciousness compared to the theory of identity, and the limits of the possibility of explanation do not come from the specific quality of consciousness but from the intersection of philosophical interpretations with scientific approaches. Thus, it is found that consciousness is the main point that separates Philosophy in various currents, Psychology in different directions, materialism of idealism, reductionism of holism, behaviorism of

introspectionism. At the current stage, divergences persist between conceptions of AI in the strongest sense, which support the possibility of making a robot with emotions and consciousness, and those that, distinguishing *consciousness* from *conscious*, believe that computer programs will simulate *conscious* (reactions to stimuli, integration of information, reportability of mental states, access to one's own states), but not in any form *consciousness*.

Among the contemporary researchers dealing with the problem of consciousness, we can nominate Roger Penrose, an illustrious physicist and mathematician who excelled in the fields of AI and Philosophy. He does not support the exaggerated optimism that the computer will be able to do everything the human mind achieves. Penrose also speaks out against the physical reductionism according to which the machine, AI and the brain operates on the basis of physical laws, which can be known. Penrose supports the reality of Mandelbrot's fractal structures and the incompleteness of quantum mechanics, supported by Al. Einstein. Addressing the issue of the possibility of the computer to have a mind and sentimental experience, Penrose inevitably reaches philosophy, especially the research of the relationship between physical and electronic structures and the nature and functions of consciousness. He pointed out that to understand these things one needs neurophysiological knowledge of the brain, its computer models and the status of AI (with the structure of the Turing machine, Godel's theorem and the theory of complexity). At the same time, it is supported the need to know the fundamentals of mathematics and the nature of physical reality.

It is known that any automation by definition is unconscious and it is difficult to implant parts that simulate consciousness. The Turing machine was designed to try something like this. However, it has elements that are programs and not activities of consciousness. It is possible to admit that some computers are aware of the programs of other computers but, "it remains unconscious in its" hard "part, as well as the brain that determines conscious, remaining itself unconscious" [1]. Consciousness is necessary to have common sense, understanding, judgment of truth and it is not necessary in programmed, algorithmic thinking. Aristotle's syllogism, Boolean's symbolic logic, the computer program can be applied without being aware of their own production process. Penrose argues against the idea that the development of computer algorithms will be able to simulate the human mind. He argues that a computer cannot function in analogy with the conscious mind, even if some aspects of its activity may be captured by computational processes. The problem of the whole human being, endowed with consciousness, goes beyond the computer.

Regarding the problem of locating *consciousness* in the brain, Penrose argues that even *conscious* is not correlated with the activity of a part of the brain. However, some neurophysiologists claim that there is a localization of consciousness in the reticular formations of the brain which, in the event of their destruction, consciousness is lost. Another issue of great importance, addressed by Penrose, is the connection between conscious and language. Language has centers in the brain with location in the left hemisphere, and this would support the idea of the location of conscious. According to Penrose, we cannot find a specific place in the brain where conscious is produced, it has "uniqueness" due to the fact that like the quantum state it is produced by existing parallel processes" [2]. Therefore, for the "conscious mental state" the quantum effects that can appear in the activity of the brain are relevant.

Another issue of major importance, addressed by Penrose, is the role of consciousness in relation to the Universe as a whole, referring in this case to the anthropic principle. According to this principle, the laws of evolution of the Universe lead to the appearance of

the conscious being - man, who has a location in space-time. He claims that this principle has a useful aspect, but that there are other perspectives to explain the evolution of the conscious being such as: the theory of quasi-crystals and quantum gravity.

At the same time, the scientist claims that consciousness is a biological form that involves intentionality that can be thought of as a digital computer with aspects that cannot be captured by the algorithm. There are elements of thinking that cannot, in principle, compete with the computer. Research into special areas of Physics such as *complex numbers, black holes, entropy, quasicrystals, brain structure, and the physical processes of consciousness* leads Penrose to support the essential role of Quantum Mechanics in the structure of mind operations, but also to assume that there are deeper levels of determining consciousness, but all being limited by the ineffability of this spiritual reality.

A distinct conception in this direction is produced by David Papineau, who represents the philosophy of naturalistic realism. In the opinion of the English philosopher, the notion of "naturalism" represents various meanings: 1) philosophy is a continuity of the empirical sciences; 2) nonacceptance of mind / body dualism and epistemological internalism. A physicalist conception is supported, according to which two systems are physically identical, if they are biologically, chemically, psychologically identical. Thus, it is stated that mental phenomena are determined by physical phenomena, and the "substance" of the mind is, in a sense, the same as the physical substance.

Papineau argues that there are no reasons for a dualistic conception and speaks out against those who claim that consciousness is "a mysterious inner light" without physical properties. Consciousness has a complex, superior form of organization that is physical in nature. Thus, the most effective procedure for explaining consciousness is the naturalistic one, according to which the human being is part of the natural world described by science.

Another researcher who, in his work, addressed the issue of consciousness is John Rogers Searle. He developed a comprehensive theory of language, arguing that consciousness and intentionality are biological processes caused by neural processes. In his position on the cognitive sciences, which promised a break with behaviorism, Searle argues that a computational theory of mind cannot be founded because human knowledge cannot be reduced to empiricism because it has a special dimension - consciousness. The central question Searle is concerned with is how to link unconscious states (beliefs, desires) to consciousness. Searle's answer involves the principle called "connection" which states that "there is an oppositional configuration of unconscious states due to which they are brought to consciousness. There is a neurological basis, a background with unconscious states and processes, but which produce conscious ideas and actions" [3].

According to John Searle, with reference to consciousness, Analytical Philosophy produced behaviorist and functionalist orientations supported by the cognitive sciences. Through this, the mental was harmed because the Analytical Philosophy characterized it as possessing some mysterious and occult characteristics. Analytical Philosophy preserves the behaviorist perspective in the problem of consciousness and requires the verification of sentences about consciousness in the observation of human behavior. We find the same shortcomings in the interpretation of functionalism, supported by physicalism, which accepts the theory of identity of mental states with neurophysiological ones. Functionalism excludes the irreducible properties of consciousness and tries to define it through causal (mechanical) relations. At the present stage, organic functionalism has developed based on the analogies of the Turing machine, according to which mental states are not functional states but logical

states of the computer, and mental processes are described as computational processes handled by cognitive sciences and artificial intelligence In his work, Searle reveals the confusion inherent in functionalist guidelines regarding the possibility of clarifying what a mental state is and how such a state is attributed to a person. Another mistake is methodological in nature and refers to the thesis that the cognitive sciences and the computer would allow knowledge of mental operations. That is, it is considered that the philosophical problems of consciousness can be transformed into technical and scientific problems. This is false, because computer programs cannot in themselves be the cause of the biochemical effects of the brain, and man can install programs without having relevant mental states. According to Searle, the nonacceptance of the metaphysical elements behind the scientific aspects of mental states gives rise to false aspects in the mind-body problem and of consciousness in general.

In general, we can say that, despite a series of impediments, some progress has been made in researching the way the brain works, the way it perceives, feels. This allows us to argue that today there are enough intellectual resources to master the power of the brain, to direct the mind and consciousness. So far, there are many approaches to consciousness, but what is strictly necessary is the question of the possibility of a scientific theory of consciousness and how to substantiate it. It is in the interest of mankind to develop a science of consciousness.

The main investigations, which have achieved certain successes, in the research of the mind-body problem and of consciousness, have been carried out in the fields of Biological and Physical sciences: quantum theory, global space theory, computational and informational theory, life and consciousness theory from the perspective of Biophysics and Medicine; in Philosophy: on the concepts *of qualia, explanation, intentionality, free will,* from an ontological and epistemological point of view; in Cognitive science and Psychology: the theory of cognitive models, the theory of integrated information, the theory of artificial intelligence; in Neuroscience: the theory of neurons and neural correlates, the functionalist theory. Recently, a number of theories have been added such as: the theory of higher perception and thinking, the theory of integrated information.

According to higher order theory, a perception or a thought does not become conscious unless they are the intentional object of a higher order mental state. That is, a perception becomes conscious only when a higher thought contains it. In this way, consciousness has a rational character between the lower and upper levels of the brain. As D. Dennet points out, "the brain is an extremely complicated machine, so mental states are the result of a dynamic process that takes place on several tracks, between inputs and outputs of the system" [4]. After the information inputs have been analyzed by the specialized lower order formations of the brain, they will be later directed to the higher formations. D. Armstrong argues that mental states come to consciousness after the monitoring of neuropsychic processes by a higher internal sense. This inner sense could be represented by the inner perception and the current states of the brain.

The theory of global space was developed by B. Baars, who states that the emergence of a new problem or the need for a difficult choice when the brain does not have an algorithm to solve it, imposes the need for more space for processing that information. It has been shown by using an electroencephalograph that when an event becomes conscious larger areas of the brain are activated. In the vision of B. Baars, the brain has a very intense activity,

and the given activity is represented by the working memory and the totality of the information that circulates at a certain moment in the brain.

The essential problem in the theory of higher order perception and thinking, as well as in the theory of global space, is that of the decision-making mechanism: who and when enters the scene of consciousness. One of the explanations is that in order for information to enter the sphere of consciousness it must persist for a certain time. But even if the information persists, we are not sure that it could enter the consciousness. There is a lot of information that persists for a long time without entering the consciousness. There is probably a "competition" that ensures the entry into consciousness of only that information that wins the competition.

G. Tononi, a specialist in Neuroscience, developed the *theory of information integration* and developed it rigorously with the help of *a mathematical theory*, which states that *consciousness* is the result of a process of integration of received information. By integrating the information received from inside and outside the body, a very concentrated information is reached. In this sense we can distinguish *a priori information, a posteriori information and actual information*. Tononi uses a "fi" mathematical function that measures the amount of information embedded in a system and assumes that it is related to consciousness. In the human brain, a high level of information integration requires a high degree of consciousness. As we reach simple organisms (worms, microbes, particles) the amount of "fi" decreases the degree of integration of information decreases, so the level of consciousness decreases, but this is different from zero. In Tononi's theory, the level of consciousness will always be nonzero. In fact, a fundamental law of consciousness is proposed by the theory of integrated information: a high level of "fi" presupposes a high level of consciousness. Thanks to this law that dominates the science of consciousness, it has been possible to integrate a range of scientific data. It is important to emphasize that integrated information is presented as a whole, which cannot be broken down into its component parts. Integrated information depends on the received information, but also on the structure, architecture of the brain that must perform the integration process.

Quantum and structural-phenomenological perspective in consciousness research

The nature of consciousness, the mechanism by which it appears in the brain and its supreme place in the universe are analyzed by St. Hameroff, from the perspective of quantum mechanics. He argues that the potential features of quantum calculus could explain the enigmatic aspects of consciousness. The model proposed together with Penrose (reduction of orchestrated objectives "Orch OR") suggests that the microtubules act as quantum processing units, and the individual dimers of the tubulin form computational elements. Quantum overlap and quantum computational form occur in microtubules, which represent cylindrical protein networks of the cell cytoskeleton in brain neurons. According to Hameroff, "microtubules couple and regulate synaptic functions at the neuronal level" [5]. At the same time, the "Orch OR" theory supports the reduction of the quantum overlap of microtubules to the classical output states that occur due to an objective factor called the "quantum gravity threshold" of Penrose-Hameroff. It results from instability in Planck-scale separations in space-time geometry. The output states that follow this theory are neither totally deterministic nor random, but are influenced by a noncomputable factor, rooted in fundamental space-time. Having a modern panpsychist vision, the "Orch OR" model describes

consciousness as brain activity related to fundamental waves in space-time geometry (Riemannian geometry).

One of those who pointed out the priorities of the theme of consciousness in science is D. Chalmers. He showed that consciousness is related to attention, introspection, reflection, voluntary control of our actions and the process of knowledge. Consciousness is what gives meaning to life, but also the most mysterious phenomenon in the universe. This is the subjective experience of the mind, and in order to integrate it into science, radical ideas are needed. Chalmers argues against skeptics who claim that there can be no science of consciousness, because consciousness by its nature is subjective.

The twentieth century was dominated by the conception of an objective science. Psychologists have objectively studied behavior, neuroscience has objectively studied the brain, but the phenomenon of consciousness has been left out of research. The recent successes, says Chalmers, also contain essential limitations. The main concern of the science of consciousness has been to look for correlations between certain areas of the brain and certain states of consciousness, but this remains a science of correlations, but not of explanations. This problem of "correlations" approached by neuroscientists is called by Chalmers the "easy problem" of consciousness. Chalmers' argument is based on the fact that this problem does not address the real enigma that would explain why physical processes are accompanied by consciousness; why there is subjective experience. This is called the "difficult problem of consciousness", and to solve it requires a scientific theory of consciousness.

Chalmers argues that existing reductionist theories, expressed in physical and neurological terms, provide information about the functioning, structure, and dynamics of the brain as a system, which determines behavior and explains how we function. However, this does not explain the subjective experience, which comes from within. Contemporary science of consciousness is a chain of explanations: Physics explains Chemistry; Chemistry explains Biology, and Biology explains parts of Psychology. On the one hand, consciousness is a real fact, on the other hand it is not clear how to integrate it into science. One of the radical ideas that would facilitate the scientific research of consciousness is that consciousness is a fundamental phenomenon, as are time, space or mass. A similar situation, Chalmers argues, existed in Physics when in the 19th century Maxwell introduced the notion of "electric charge" to explain the phenomenon of electromagnetism. Postulating consciousness as a fundamental element would pave the way for the scientific study of consciousness.

Another radical idea, according to Chalmers, refers to consciousness as a universal element. "Any system could have a certain degree of consciousness" [6]. This conception is called panpsychism, according to which not only man possesses consciousness. This, Chalmers argues, is the most effective way to reveal the fundamental laws that link consciousness to physical processes and information. Wherever there is information processing, there is consciousness. Panpsychism could change the relationship with nature by asking questions about the consciousness of other systems, such as computers, and this can have serious ethical and social consequences. rom a panpsychic informational perspective, once computers process and integrate complex information, then they possess consciousness. If this is the case, then there are serious problems with the development of intelligent information systems. So, according to Chalmers, the panpsychist perspective will pave the way for a scientific theory of consciousness. Understanding consciousness is the true key to understanding the universe and oneself.

The position that criticizes the presuppositions of current science regarding the understanding of consciousness is presented by Mihai Drăgănescu, protagonist of the Romanian school in the fields of cognitive sciences, AI, philosophy of mind and consciousness. He elaborated fundamental works, created perspectives and new ontological and epistemological orientations in philosophy. The combination of research in quantum physics, computer science, AI, cognitive sciences and psychology places Mihai Drăgănescu among researchers in the field of philosophy and cognitive science, who put forward an original structural-phenomenological conception of consciousness.

So far, no definition of consciousness has been reached, on which there is a broad consensus. The greatest successes, according to M. Draganescu, were obtained by Neurobiology, which studies consciousness as an activity of the brain and, therefore, from the perspective of its neural structure. Neurology claims that consciousness is an emerging property of interconnected neural networks and advances the RNA model. In this model, self-awareness or the self-referential nature of consciousness cannot be explained. According to M. Drăgănescu, Neurology has a long way to go until the neuronal level of consciousness is fully clarified. And, explaining consciousness based only on the neural level will be very difficult, if not impossible. "Neurology will approach the reality of mental phenomena if it evolves from structural biology to a structural-phenomenological neurobiology" [7].

Mihai Drăgănescu discusses the structural-phenomenological theory that follows the direction of Penrose-Hameroff and that seeks a deeper level of matter than the quantum one. He supports the concept of "infomaterial" which is a subquantum reality capable of substantiating a viable theory of the brain with phenomenological properties. Another original idea in structural-phenomenological theory is the "phenomenological meaning" which is a fundamental and general property of nature. And at this deeper level, nature has in it something complementary yet unknown. Clearly, existence is not dual, it has a fundamental complementarity, and complementarity can be a general ontological law" [7].

Mihai Drăgănescu founds the structural-phenomenological theory that seeks to explain consciousness as a form of the mind determined by a subquantum level. He argues that quantum theory is not the final theory in science, because quantum phenomena are generated from a deep underlying reality, which has its own laws, including those of generating a quantum world, with space, with time, which generates the last elementary particles and which allows phenomenal information to intervene.

Conclusion

Although, intuitively, consciousness is a phenomenon given in a direct form, however, it remains the most mysterious and the most difficult element to define in the universe. Consciousness is the hard core of contemporary science, a nut that cannot be broken with current concepts and methods. The explanatory gap is determined by the impossibility of objective science to explain feelings, the subjective nature of consciousness. This cognitive "niche" orients contemporary inter and multidisciplinary research toward examining the fundamental, universal, and intrinsic nature of consciousness. Despite the difficulties, science has achieved certain successes determined by conceptual tendencies: the materialist monism for which consciousness is an epiphenomenon of the brain; the Cartesian dualism that supports the existence of a spiritual component of the mind and the quantum and phenomenological perspective that affirms the need for an interdisciplinary approach that

supports the existence of a subquantum reality capable of substantiating a viable theory of consciousness with phenomenological properties.

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FAMILY COPING STRATEGIES IN THE MIDST OF CORONA CRISIS

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Abstract. The family as the unit in the social system has an important role and becomes the first social environment to introduce love, affection, social culture, and religion. When the world is suffering from the COVID-19 pandemic, the families are also affected by some impacts included: family health problems; family economic; family harmonization; family socio-psychology; and socio-culture. The family health is composed of fundamental dimensions: family social climate; family integrity; family functioning; family resistance and family coping. The family coping concept is the capacity of the family to confront, mobilize, and act on stressful events. This article illustrates the aspects of family health and coping strategies in the midst of the COVID-19 in Indonesia. It aims to inform and be the reference for further study related to the family adaptation in the corona crisis. We reviewed many works of literature in the form of articles from various journals. During the COVID-19 pandemic, families must be able to survive. COVID-19 pandemic does not only affect physical but also mental health. The way to deal with the events depend on family characteristics, the severity of the events and family support. There are two types of coping strategies that families in Indonesia usually adopt including reducing expense and increasing income.

Keywords: *coping strategies, corona crisis, COVID-19, family health, family coping.*

Rezumat. Familia, ca unitate în sistemul social, are un rol important în a deveni primul mediu social care introduce dragostea, afecțiunea, cultura socială și religia. Când lumea suferă de pandemia de COVID-19, familiile sunt afectate și de unele impacturi, printre care: probleme de sănătate a familiei; economie familială; armonizarea familiei; socio-psihologia familiei și socio-cultura. Sănătatea familiei este compusă din dimensiuni fundamentale: climatul social familial; integritatea familiei; funcționarea familiei; rezistența și adaptarea familiei. Conceptul de coping familial este capacitatea familiei de a se confrunta, de a se mobiliza și de a acționa asupra evenimentelor stresante. Acest articol ilustrează aspectele legate de sănătatea familiei și strategiile de coping în pandemia COVID-19 în Indonezia. Acesta își propune să informeze și să fie referință pentru studii ulterioare legate de adaptarea familiei în criza corona. Am trecut în revistă multe lucrări de literatură sub formă de articole din diverse reviste. În timpul pandemiei de COVID-19, familiile trebuie să poată supraviețui. Pandemia de COVID-19 nu afectează doar sănătatea fizică, ci și psihică. Modul de a face față evenimentelor depinde de caracteristicile familiei, de severitatea evenimentelor și de

sprijinul familiei. Există două tipuri de strategii de coping pe care familiile din Indonezia le adoptă de obicei, inclusiv reducerea cheltuielilor și creșterea veniturilor.

Cuvinte cheie: *strategii de coping, criză corona, COVID-19, sănătatea familiei, coping familial.*

Introduction

The family as the unit in the social system has an important role and becomes the first social environment to introduce love, affection, social culture, religion, and morals. It is also the main defense for negative influence from the social dynamic. Religion is an important aspect of life for Indonesian and is the principle of state ideology. Religion is not only the expression of the individual relationship' with god but also the greatest influence on family norms and social control. Therefore, the parents introduce religion to the children at a young age and expect the religion to guide their life. When the COVID-19 pandemic hit the world, the families were also affected by some impacts included: family health problems; family economic; family harmonization; family socio-psychology; and socio-culture. Indonesian society cannot be separated from religion and culture, so that the expressions of a religion are embedded in the culture. The culture in Indonesia is an identity of the ethnic groups and perceiving culture can improve the position of the ethnic group among multiethnic in Indonesia. The family system introduces individual to value, customs and cultures that are practiced within the society. Through those experiences, adults gain the understanding, emotional, and moral commitment to act among the communities.

Indonesian society considers that having children is a blessing and contributes to family well-being and improves the quality of married life. While the definition of health is diverse in Indonesia. It is strongly affiliated with the religious and cultural backgrounds of Indonesian [1 - 2]. For most Indonesian, health is a condition needed to accomplish daily activities, in other words, health is function. Someone is categorized as healthy if he/she can do things. The way of Indonesian defines health is associated with their poor performance in preventing disease. Because they will not take any actions related to their health condition if their daily activities have not been hampered. It is predominantly caused them to delay seeking care. The majority of Indonesian, only seek medical help when their illness reaches advanced stages resulting in prolonged treatment, more costly treatment, or even ineffective treatment [3]. Moreover, according to the Indonesian belief that health is granted by God, it is a test from God because an individual has failed to follow the prescribed religious principles [2]. Besides that, health and illness are also associated with balanced harmony.

Families ought to be able to survive in the midst of a corona crisis. COVID-19 pandemic does not only affect physical but mental health. Social distancing, self-quarantine, school, and work from home have become a new normal these days [4]. The uncertain condition makes the family the target of social and economic aspects needs cooperation among the members. The balance between work and family life is difficult to maintain in modern society because of the demands of work and the role in a family environment. This could lead to stressful situations for an individual. Work-family conflict is a psychological aspect. The pressure of sharing the role of work in the household produces negative consequences. The level of participation in the households will create difficulties to participate in work that resulted in home conflict. In the midst of the COVID-19 crisis, many employers have been recommended to work from home. Some are happy about this situation because of the support from multimedia technology to effectively communicate with others. This is based on the research that there were still 36% of Indonesian who were not able to adapt to

technology although it could foster collaboration with co-workers during work from home since they have difficulties to separate work and home life. But some will find it difficult to do everything at the same time at home. The importance of stay at home policy is challenging during COVID-19 outbreaks. Stay at home policy becomes more complex. The family tends to respond to the corona crisis differently. From Wahyuni' research [5], it was known that social media impacted personal mental health. This might trigger stress. Furthermore, people tend to be panic, worried, and restless. Because many people around the world are suffering from mental illness in the midst of the corona crisis, World Health Organization creates procedures to support people with a mental health condition from the impact of the pandemic crisis.

The policy is challenged for implementation in society because of many interests, motivations, and willingness [6]. Participatory provides space for various parties involving in formulation, implementation also monitoring government activities. Thus this active role of community is important to carry out development programs. Participatory concepts involve lots of parties that provide motivation, knowledge, experience, skills, and access to partnerships especially in social and economic fields [7 - 9]. Among many development programs in Indonesia, The Family Empowerment Post (Posdaya) has three pillars that can accommodate community needs in the economy, health, and social sectors. Posdaya is important to deliver information, education, as a communication forum and coordinating activities to strengthen family function in the field of economy, environment, health, and social [10 - 11]. Posdaya is a group of people in the community who' aware and enthusiastic in carrying the duty in providing services in the field of health and education for children and pregnant women and in the field of economic sectors.

Family function and empowerment are really important to achieve individual and social welfare in the economy, health, and social fields [12]. The symptoms of fear, anxiety, and uncertainty among the different populations across countries may associate with distress in the health system [13]. This imposes the necessity for monitoring public health in the different categories of society. There are two types of family-children balance well-being environment: physical and behavioral. The physical environment requires related elements to children' ability to physically connect with their environment such as; home layout, the bedroom comfort, playground, study area, air quality, temperature, lights, and noise effect [14]. Physical environments impact children' participations in positively or negatively physical activities. While the behavior environment relates to the way the children connect with others and may lead to interaction or distraction. In health sector, Posdaya serves pregnant women, toddler and elderly at Posyandu, provides empowerment for Posyandu officers, activists, and cadres to increase motivation, knowledge, skills in maintaining the health management system for the family and environment. In the education sector, Posdaya improves knowledge and skills on learning media for teachers in early childhood education and kindergarten. In the economic sector, Posdaya creates and develops small business groups to increase family income and welfare. While the problems aroused during the implementation of the Posdaya Program in rural areas were: low levels of organizational communications among administrators, lack of community involvement, low participation, motivation, community apathy, lack of rural government initiative, and support to use their budget.

The Family Empowerment Post has been implementing for community development in rural areas, especially in education, economy, and health. Even though it only provided minimum standards of service in terms of transferring knowledge and skills to the community. The responsiveness, productiveness, and innovation are needed to increase the motivation,

knowledge, and entrepreneurial skills of rural communities to maintain the health and welfare of families in the midst of COVID-19 in Indonesia. The theory stated that the ability to cope was not an inborn personality. It is related to physical and supported by the environment. We ought to adapt in some new ways to survive in the environment. The theory of coping emphasized the process to deal with the problems, implement the skill to respond to problematic situations, and apply for self-management in the midst of difficult situations. This article illustrates the aspects of family health and coping strategies in the COVID-19 crisis in Indonesia with the aim to analyze family health and coping strategies. While the contributions of this research are giving additional information on family health aspects particularly in dealing with the pandemic crisis and the source of references for related parties to conduct the research and policy problems. We have reviewed some works of literature to guide us to answer the problem in this article. They are Indonesian family characteristics related to health aspects management and family coping.

Indonesian Family Characteristics

Indonesia as a multicultural country consists of hundreds of ethnic groups. Marriage remains common and universal in various ethnic groups [15]. However it remains universal, the number of non-married people is increasing particularly in big cities. One reason for this trend is many young people prefer to pursue careers and studies rather than marriage. In many ethnic groups, it is common for adults to stay with their parents after marriage for a period of time until the new couples are able to afford to form their own independent households. Intergenerational living arrangements remain common in Indonesian society even though they are declining nowadays. It is because there are more work and life opportunities available in the city that promotes urbanization [16]. In a social context, the cohabitation living arrangements differentiate a collective culture such as Indonesian from an individualistic society. Adults involved in cohabitation living arrangements are considered to be adhering to the tradition to fulfilling their lifelong obligations to their parents, in the form of support and respect nurtured by filial piety. These are some considerations of adults living with their parents after marriage: 1). the inheritance of land and property; 2). the norms in Indonesian society for child care; and 3). the decisions of the timing for childbearing. Land and property inheritance will consider the *adat* law (local ethnic-based laws and customs); each ethnicity has its own arrangements. While for child care the grandparents will usually look after the grandchildren. The duty is seen as the investment for the future with the expectation that they will be taken care of by the children and the grandchildren in the future [17].

Cohabitation refers to the process of sharing the experience and living within the common and defines time and space. It is a process that allows individuals, communities, and organizations in managing meaningful and stable relationships. Living together can be described by three levels of relationship: emotional, organizational, and social. The cohabitation relationship on an emotional level addresses the issue of family relationships between parents and children; couples relationships living together with peer groups, and the complexity in managing the new lifestyle. An organizational context is a place where many individuals spend a large part of their lives, building relationships, setting up ways of being together, investing energy, emotion, and hopes. While the social level relationship of cohabitation refers to the context of civil society, the interaction in the community in a broader sense on the global social context [18].

Family Coping

Collective coping is the behavior and thought of some individuals to overcome the stressors internally or externally. These activities are affected and influenced by any media to form people' mindsets to face problematic situations [19]. In relation to family coping, this means the capability of the family to act and respond to the appearances of stressors that involve behavior and cognitive actions to overcome the pressures. Meanwhile, the strategies of coping are expressed through the communication and support to the positive feeling among family members. These strategies might be changed related to the environments as the results of conflicts, demands, disturbance among family and community. From the explanation we conclude that the ability to cope will be changed and modified based on particular conditions to form well-functioned communication, self-esteem, family organization, family bonds, and family unity within the family system.

Corona Crisis

A Crisis is a situation as the result of unexpected and unpredictable events. A crisis requires rapid decisions making to limit the various effects. The damage caused by the crisis may vary based on the nature of the crisis. The crisis could affect health safety badly. Then it needs crisis management as the implementation of the strategies to overcome sudden negative events and potential risks. There are many stages for forming effective crisis management ranging from pre-crisis diagnosis, crisis response, and post-crisis. COVID-19 has influenced every aspect of normal life. This pandemic is impacted daily life, economic sectors, education, health, political security, work-life and social networks. From many works of literature, we have noted that governments around the world responded and acted differently to face this pandemic and resulted in particular success in dealing with this pandemic [20]. Coronavirus disease 19 has turned into an unexpected crisis around the globe within countries and societies. This crisis must be faced and we must adapt to new ways of dealing with the nature impact [21].

The coronavirus disease 19 has become a health crisis that resulted in many crises vulnerably. There must be a rapid policy response for the consequence of this crisis. There are needs for contributions, power, and participation from many parties to support the research and better policy. Many countries have shown the strategies to respond to the corona crisis as shown in the quadrants of effective control in the midst of the COVID-19 pandemic from Baniamin, Rahman, and Hasan' research [22]. According to their research, there were specific scenarios to control such pandemic illustrated in four quadrants. Q1 shows effective mitigating with good preventive strategies. Hong Kong, Japan, and South Korea were examples of the countries that have prevented small-scale coronavirus outbreaks. Q2 means the rapid mitigating strategy but does not have good preventive ways. China was the example of a country that failed to protect its citizens during the coronavirus outbreaks. Q3 shows the ineffective ways of mitigating and effective preventive actions. The Q4 shows the ineffective mitigating strategy with effective preventive ways. Below is the figure of those four quadrants.

Method

This article uses documents as the research method. We reviewed many works of literature in the form of articles in various journals from the year 2011 to 2021. A literature review is used for looking at the theories which support our research. We review the works of literature on, Indonesian Family Characteristics and Family Coping Strategies.

Figure 1. Scenarios to control a pandemic.
Source: Baniamin et al (2020).

The literature review helps to maintain a framework in accordance with the theory, findings, and results to answer the research question. The purpose of the literature review is to be a theoretical basis and idea of what other researchers have done. Some steps to conduct the literature review are as follows: 1). Problem formulation; 2). Searching literature database; 3). Data evaluation; and 4). Analyzing. While the techniques in the literature review include: a). Comparing; b). Contrasting; c). Criticizing; d). Synthesizing, and e). Summarizing.

Results

In the result section, we divide our research findings related to problems formulation from the introduction. There are family health systems and family coping strategies in Indonesia.

Indonesian Family Health System

Mboi [23] stated in the research that Indonesia is a country with different populations with a series of demographic, epidemiological, social, economic, and political transitions. It is also experienced by healthcare system transitions. The healthcare system is essential to deliver health services that meet the entire population. The Ministry of Health (MoH) and the Ministry of Home Affairs took on the primary responsibility for health services in Indonesia. The provincial and district governments that are under the Ministry of Home Affairs have the responsibility for planning and managing the healthcare services. While the Ministry of Health retains its responsibility for tertiary and specialist hospitals creates the regulation, provides resources, manages, and plans issues in public health, and ensures national health insurance to all of the citizens. This minister has issued Law Number 39 in 2016 related to the family health program. The program aims to facilitate families for health promotion services to form basic cure, rehabilitation, and attain the basic indicators of local services. Finally, this program will improve the realization of the basic services. The priority areas of the regulation are 1). Reducing the death of mothers and infants; 2). Decreasing the prevalence of stunting cases; 3). Implementing countermeasures against communicable disease, and 4). Reducing and managing non-communicable diseases. The implementation guidelines are focused on Community Health Center and contain some interventions: a). Regular home visiting; b). providing information packages for the family regarding the disease management; c). Communication platforms such as focused group discussion; d). Counseling,

and e). various community meetings. While the serious shortcoming for the implementation are: 1). the lack of budget; 2). inadequate human resources; 3). the lack of support for local authorities; 4). the needs to improve the electronic facilities; 5). lack of community knowledge on the program; and 6). inconsistent coordination from the central authority [24].

The residents who have registered for BPJS (Health Insurance) can access all facilities including first-level and advanced health facilities. Health facilities in Indonesia are organized in a tier system. A non-emergency patient can access the primary care health facilities without a prior appointment, but when they need to access hospitals or more specific care, they will need to have a referral letter from the primary care facility. The healthcare facilities at the primary levels are delivered by the public sectors through the community health centers. Services from the private sector come from private clinics and practices of non-specialist healthcare providers (midwives, nurses). For emergencies, patients can get access to general hospitals in the emergency unit.

Since health is an important aspect of life among societies, WHO has issued dual health systems in the midst of the corona crisis. They were focusing on reducing coronavirus cases and promoting basic healthcare. The first mission to reduce the number of corona cases has failed and resulted in the economic sector. This crisis management to respond to the virus has shown that the country that has implemented health interventions extensively does not suffer from bad economic effects in the midterm. This means that pandemic has economic costs and outcomes. From Setiati' and Azwar' research [25], the government requires the instruments for successful implementation policy. They are mitigating actions and post-recovery on coronavirus crisis. The mitigation policy from their research covers the containment measures; the incentives for the workforce in health sectors, and supplying isolation facilities. Many actions are needed from society to contribute to facing the pandemic by prioritizing health in their everyday lifestyle.

The degrees of stress are related to age, education, sex, and status. Staying with many children in a country with a large number of COVID-19 cases is more stressful. This means the family needs public healthcare services both to handle mental and physical illness. In Indonesia, the government has announced the mandate to the citizens for doing the activities at home from working, studying, and praying. But these suggestions have not been fully implemented because the society need to adjust to the new ways. For almost family in Indonesia, staying at home with children while doing the works from home are stressful. This situation will lead to public mental health as the results from corona crisis. Furthermore, The Ministry of Health has announced a counseling hotline from call center 119 extension 8 to support physiology consultations. This program called SEJIWA which means SEHAT JIWA. Another supporting mental programs for society were released by The Indonesian Psychiatric Association that announced the guidelines and maintaining mental health procedures in corona crisis. It was according to WHO guidelines to include the time management for watching any particular media with COVID-19 news, performing relaxation and maintaining activities to reduce stress feeling, and sharing with the community. For supporting isolated person in Cipto Mangunkusumo Hospital, the local government of Jakarta Capital City creates POJOK SAHABAT as the means of communication among families' patients. This service helps the member of the family communicates by facilitating with the communications means. Currently, there is an online service for mental health support. From The mobile application in social media. This innovation established by some countries around Asia regions, South East Asia and Timor Leste [26].

Indonesian Family Coping Strategies

The price of basic needs in the midst of the COVID-19 crisis was high. The higher prices of food during pandemics include sugar, chilies, garlic, chicken, beef, and cooking oil. One cause is food distribution [27]. Many urban families in Indonesia reduce their consumption of rice. The consumption of instant noodles has increased slightly. The family tends to reduce animal-based protein, plant-based protein, fruits, and milk [28]. Family strategies to reduce food expenditure include prioritizing food for children, reducing the frequency of instant noodle consumption, reducing the number of cigarette consumption, and buying cheaper food. While the non-food expenditure strategies are: reducing the cost of dining out, reducing recreation cost, reducing the quality of clothes purchase, reducing the frequency of household furniture, and reducing savings. Besides expenditure strategy, there is family income strategy among Indonesian. These strategies are: applying savings, utilizing empty land to grow food crops, finding another jobs, owing money from relative, and converting items into cash to pawn loans. The Indonesian family characteristics that influence coping strategies are the location of residence, wife' and husband' education, also wife' and husband' income.

Discussion

We have concluded from many theories in literature reviews that family health is the conditions of all members that include many aspects from the social climate, the integrity, the function, the resistance to coping ability. The stressors influence every family among the functional or dysfunctional ones. These particular conditions related to the response of family in dealing with stressful situations are related to the characteristics of families, support and the degree of events. We also noted some aspect to the ability for overcoming the problematic situations are culture, social system, and norms where members of family have been raised. This sociocultural context plays the significant roles on healthcare, knowledge of certain disease, and the acts towards the difficult times. Therefore, the beliefs, behaviors and emotions are different among every individuals within the society. The mental health knowledge, treatments and education from psychological support, community, government, and health professionals are very essential in the midst of pandemic crisis.

Family coping knowledge that involves the cognitive and self-management skill to ensure mental health among every family member needs to be adjusted to the new ways and particular situations. The ways the strategies might be formed by communicating and acting positively to the external disturbance in the family and among societies. The strategies must be maintained to support community relationships and the family within social and family systems. These processes are very vital to deal with hard times and events. The social system and culture play significant role in the research results. The culture is based on the social system, religion, and support from the entire community. The different of sociocultural context and environment are shown from the level of economic of family, degree of education, age, sex, and status. These characteristics influence on the ways of a person' responds, adapts, and interacts with the crisis conditions that form collective and family coping. The roles of family professionals from government agencies and community support are critical to family adaptation and well-being. The literature review on the coping concept to a person or a collective action is influenced by individual or community characters. Emotional feelings such as self-blame and grumbling are correlated to health conditions that form the problem as anxiety and depression. The positive approach to particular emotions would be problem-solving which may contribute to reducing levels of stress. The social

support from society and especially in the family are needed to form effective coping strategies to reduce particular problems. Since the coping strategy is an individual or group effort to reduce the problems, there are common pressure that needed a coping strategy is an economic pressure for example the burden of losing an income, change in the disadvantageous employment status, and economic difficulties. Job instability may makes pressure on the family. There are two types of coping strategies that families usually adopt including: reducing expenses and increasing income. The expenditure reducing strategies are easier to be carried out when there is any economic difficulties but an income-generating strategy needs special human resources and networks that cannot be done by all families in time of economic tension. Examples of expenditure reducing strategies include buying a cheaper type of food, reducing the frequency of food consuming, delaying treatment, and buying cheaper type of medicine, reducing the frequency of buying clothes and furniture. These actions are more carried out in the low-income family. Reducing the food consumption of animal based-protein while in the non-food dimension, many families do not change in spending education.

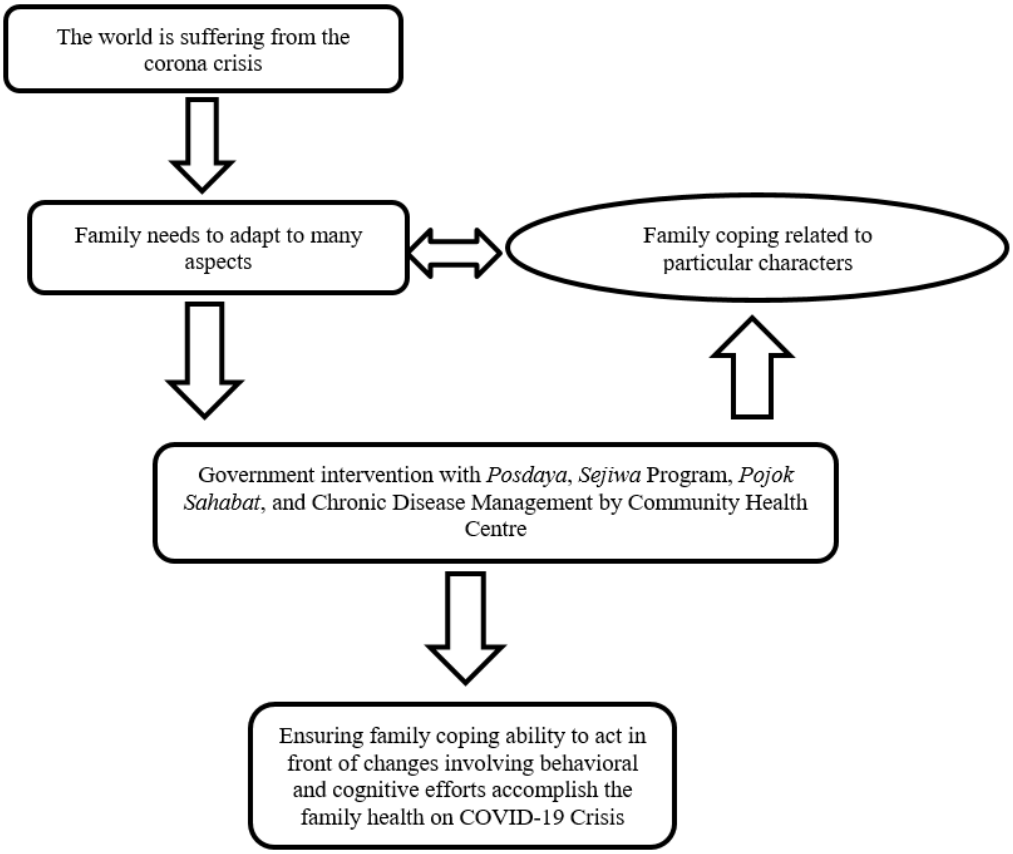

Figure 2. Indonesian Family Coping in the midst of Corona Crisis.
Source: Authors, 2021.

The illustration above on the capacity of family coping strategies in Indonesia in the midst of the corona crisis is formed in a framework by the theory, findings, and results to answer the research question.

From figure 2, we analyze that these days the world is suffering from the corona crisis. Therefore, the family needs to adapt to many aspects. The family needs the coping ability as the support system in hard situations. These ways of dealing with the stressors are based on the family characters and sociocultural aspects where the family was raised. From the Indonesian context, community and government try to interfere the society with national

health programs particularly with mental treatments support. Many of government actions were form in SEJIWA, POSDAYA, and POJOK SAHABAT to help the family in the community dealing with mental supports. Finally, these collective actions from government, health, and family professionals also communities around the regions would be used as strategies to ensure collective and family coping capacity in the midst of a pandemic crisis.

Conclusion and Suggestion

The conclusion of our documents analysis about family health is formed by many elements. The health elements are formed from characters and sociocultural context. The characters are referred to age, sex, status, level of economics, and degree of education. While the sociocultural contexts are derived from cultural background, ethnics, and religion. These diffusions of characters and sociocultural contexts would form individual, collective, and family coping in dealing with the stressors. Meanwhile, there are two types of coping strategies that families in Indonesia usually adopt including: reducing expenses and increasing income. Examples of expenditure reducing strategies include buying a cheaper type of food, reducing the frequency of food consumption, delaying treatment, and buying a cheaper type of medicine, reducing the frequency of buying clothes and furniture. Besides expenditure strategy, there is a family income strategy among Indonesian. These strategies are: applying savings, utilizing empty land to grow food crops, finding another jobs, owing money from relatives, and converting items into cash to pawn loans.

Apart from the explanation, The Indonesian Government should be synergized with many levels of government agencies including The Minister of Research and Technology Together with the Minister of Finance of Indonesia to improve and implement The Indonesia Endowment Fund for Education to increase research about COVID-19. The role of scientists is vital to fight against the virus together with the coping ability among Indonesian Families in the time of the COVID-19 pandemic.

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LANDSCAPE, COLORED PASSION IN THE CREATION OF ARCHITECT EUGEN BOGNIBOV

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Abstract. The landscape genre is painting and contemplation through the creation of the architect and professor, doctor of architecture, associate professor Eugen Bognibov, from the Department of Architecture, Faculty of Urbanism and Architecture, Technical University of Moldova. The landscape was certainly one of the favorite types of painting of professional artists, but also for lovers of beauty. The predilection of the architect and painter Eugen Bognibov for the landscape genre can be explained by the fact that the Moldovan lands offer an enormous variety of views and possibilities to practice the landscape: reliefs, forested hills, hills, steppes, roads winding through vineyards, and orchards, cities and villages, water pools, architectural monuments of stone and wood, a true cultural heritage of the country. And the author remarks that the painting dedicated to the architect and professor Eugen Bognibov represents the state of lyricism and harmony, is the link between man and nature, which is distinguished by the colorful freshness of urban, rural, forest landscapes, etc. Various painted views of the historical area of his hometown, Chisinau, images of the morning city bathed in the rays of the generous sun or landscapes near the village of Butuceni, etc. Therefore, the motivation for painting and landscape became for the architect Eugen Bognibov, a free manifestation of his creation through paintings with saturated colors, works presented in various exhibitions.

Keywords: *artist, landscape, nature, painting, architecture, color.*

Rezumat. Genul peisajer este forma de pictură și contemplare prin creație a arhitectului și profesorului, doctor în arhitectură, conferențiar universitar Eugen Bognibov, din cadrul Departamentului Arhitectura, Facultatea Urbanism și Arhitectură, Universitatea Tehnică a Moldovei. Peisajul a fost, cu certitudine, unul dintre genurile de pictură preferate al plasticienilor profesioniști, dar și pentru iubitorii de frumos. Predilecţia arhitectului și pictorului Eugen Bognibov, pentru genul peisajer poate fi explicată, prin faptul că meleagurile moldoveneşti oferă o varietate enormă de privelişti şi posibilităţi de a profesa peisajul: reliefuri, dealuri împădurite, coline, stepe, drumuri ce şerpuiesc printre vii şi livezi, oraşe şi sate, bazine acvatice, monumente de arhitectură din piatră şi lemn, un veritabil patrimoniu cultural al ţării. Iar autoarea remarcă că, pictura dedicată a arhitectului și profesorului Eugen Bognibov, reprezintă starea de lirism şi armonie, este liantul dintre om şi natură, care se distinge prin prospețimea coloristică peisajelor citadine, rurale, forestiere ș.a. Diverse vederi

zugrăvite din zona istorică a orașului natal, Chișinău, imagini a orașului matinal scăldat în razele soarelui generos sau peisaje din preajma satului Butuceni etc. Prin urmare, motivația pentru pictură și peisaj a devenit pentru arhitectul Eugen Bognibov, o manifestare liberă a creației sale prin tablourile cu culori saturate, lucrări prezentate în diverse expoziții.

Cuvinte-cheie: *artist, peisaj, natură, pictură, arhitectură, culoare.*

Introduction

We notice that the consolation through painting for some artists is focused on the aesthetic side of the landscape, for them, artists, nature is an "attractive material for contemplation" , a reason for joy, "a force that stimulates life"[1, p. 163; 3].

Nature for the creator Eugen Bognibov, is an opportunity for aesthetic delight and becomes a reason for spiritual silence, for thinking about existential and dynamic problems, for inner feelings. Gradually, the artist's dialogue with nature leads to new interpretations of man's relationship with nature, and the image of the painting gets a metaphorical imprint, with a philosophical substratum, of the link between the two. The artist emphasizes the dissension between time and eternity; he invites the viewer to meditate on the message of nature in the landscape exposed to the viewer. The high sonority of the chromatic structure gives the painting a bright atmosphere and stresses the emotional state, the good mood of the inhabitants known and loved by the artist. The author's predilection for certain means of expression and plastic motives reveals the "individuality" of the landscape genre, the accentuated temperament of the architect Eugen Bognibov and the vision of the world.

The genre of landscape, according to the art historian and critic Kenneth Clark (1903-1983) awakens a special and terrifying feeling, of anxiety, caused by the movements of the wind, the harmony of the picture that seems to connect heaven and earth. The individual perception of the painter has become the most important way of manifestation for the beauty of nature, namely through the genre of landscape, to which are added nostalgic memories [2]. Thus philologists Pietro Fanfani and Giuseppe Rigutini in the explanatory dictionary - *Vocabolario Italiano della lingua parlata*, (1875) define the landscape as a “complete view or part of it, where it is chosen to be the subject of painting. By interpreting the space where the beginning and the infinite merge, the landscape can be interpreted as an outer space - of a locality or a view, seen panoramic, or as an inner space - perceived on a smaller dimensional scale, representing only a fragment of the vastness of the landscape. Within a higher level of plastic processes, a purely intellectual, emotional, and affective product is created, meant to emphasize, here, the role played by a representation of the image in our vision of the world and of the value we attribute to the landscape. [4 - 6].

In the subject's continuation we mention that, according to the assertion of R. Assunto, french painter and pedagogue (Bordeaux 1885–1962, Paris), author of the work "Treatises on landscape and figure", states that the landscape is a representation of an extremely open space and the beauty of nature that many "*pass with their eyes wide open, without noticing it*...", the painter feels it organically [1 p. 6].

Nature is the source of inspiration for painters
/Victor Hugo/

Idealization of nature in the landscape through color and imagination

The problem of the idealization of the surrounding world gains new aesthetic forms through the way of compositional structuring, based on the rhythmic dynamism of the daily

life of this end of the century. Tânărul student, Eugen Bognibov, la UTM, FUA, catedra de Arhitectură, o fire ambițioasă în proiectare de arhitectură dar și pictură peisageră (fig. 1). The young student, Eugen Bognibov, at UTM, FUA, Department of Architecture, an ambitious person in architecture but also landscape painting "Figure 1" [7 - 11].

For the works of Professor Eugen Bognibov, architect and plastic artist, landscape art became the business card, being presented in exhibitions, constituting the vast majority of his works. The painter and architect Eugen Bognibov, with extensive knowledge in architecture and the art of painting, through his refinement and talent as a plastic artist at a much higher level, the master leaned on the sporadic landscape, hoping to find the harmony of nature and peace of mind. The paintings made over the years differ substantially, their artistic value is determined by the mode of expression, the subject presented, the connotation, and the impact of the times. All have become an inexhaustible source for the artist who opted for landscape in his creation [6 - 9].

Figure 1. Student years Eugen Bognibov, future architect (right).

Figure 2. Eugen Bognibov. a) *Road from Butor*, 2001, 48x70 cm, oil / canvas;
b) *The roads of Russia. Suzdal*, 1985, 24x37 cm, a/ paper;
c) *Sankt- Petersburg*, 2006, 30x50 cm, a/paper.

Thus, the principles and ways of approaching the landscape, of the painter Eugen Bognibov, evolved, diversifying the preferences towards certain landscapes: riverside, mountain, rural, architectural with panoramic views: *Road from Butor (Drum de la Butor)* (2001), *The roads of Russia. Suzdal (Drumurile Rusiei)* (1985), *St. Petersburg* (2006) ”Figure 2 a, b, c”, lyrical landscapes with a small church in the middle of the landscape composition with architectural elements, with winding roads in the background, made of canvas and cardboard, in the technique of oil and watercolor colors, amazing us by the professionalism they.

Most landscape painters give the predilection for epic-romantic images treated according to the principle of "bird flight" (obtained by raising the horizon above the middle of the painting). This panoramic view gives epic grandeur to the simplest motifs in nature with roads, locality, wide plains, hills, etc., and contributes to the evocation of the beauty of nature and to the propagation of the idea of the greatness of the native country.

The artist chooses observation points from where you can admire the beauty of nature in all its complexity and diversity. The painter Eugen Bognibov, operating with contrast effects, uses multi-plane rhythmic constructions with wide, perspective openings [12].

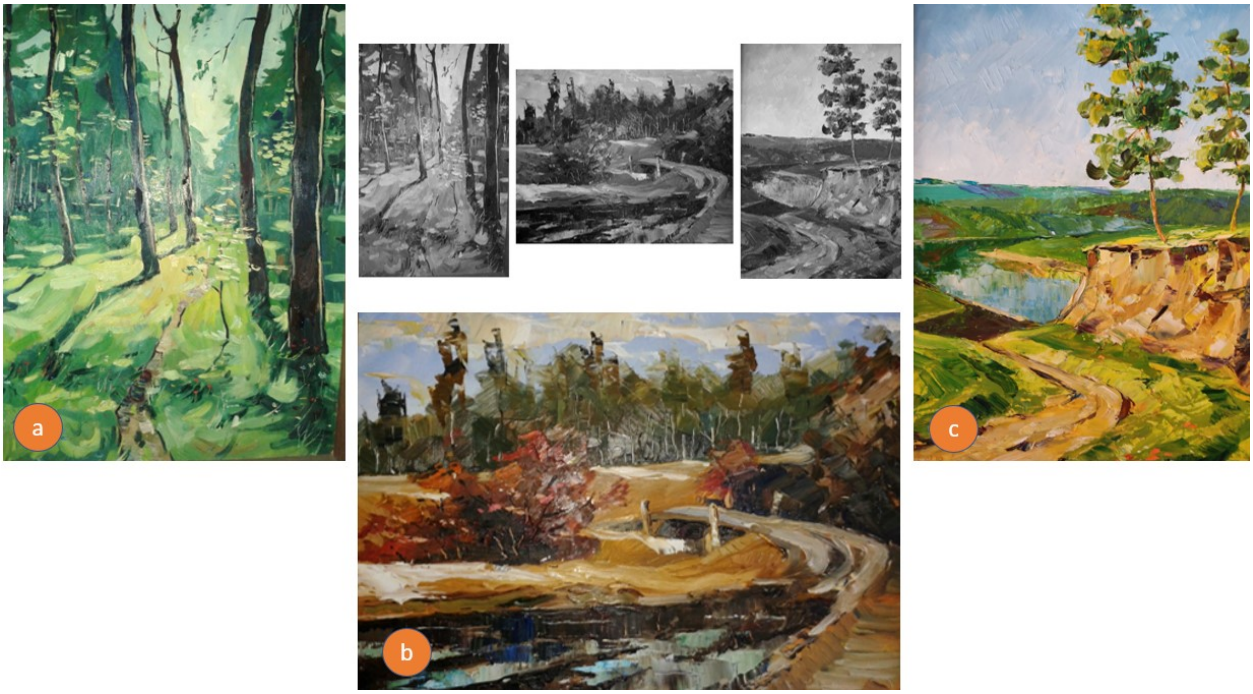
The landscape continued to be a possibility to express the true reality in the paintings of the master Eugen Bognibov, of compositional and chromatic solution of the works: *On the lakes of Lithuania* (1988), *Winter in Suzdal* (1987) (figure 3, a, b), with an exact, architectural drawing, a dynamics of forms and expression of feelings, with a special treatise, affection, and professionalism. The high sonority of the chromatic structure gives the landscape paintings, represented from different places of Moldova, Lithuania, and Russia, a bright atmosphere and accentuates the emotional state, which awakens associative ideas of joy and well-being [8 - 10].

Figure 2. Eugen Bognibov. a) *On the lakes of Lithuania*, 1988, 48x70 cm, oil/canvas; b) *Winter in Suzdal*, 1987, 48x70 cm, oil/canvas.

Professional creation: nature - the space of contemplation with architecture

Following step by step the evolution and constitution of the landscape in the creation of the architect, Professor Eugen Bognibov, in different periods of time, we meet the series of summer and autumn landscapes: *Suffocating summer. Close to silence, Near the Dniester river, Autumn landscape, Forest path,* etc. ”Figure 3-a, b, c”; ”Figure 4-a, b, c” with unpretentious motifs, plains and rhythmic alternation of trees, hills with water surfaces, an invaluable source of colorful emotions in the summer or autumn season. In his tendency to reflect certain aspects of nature, the painter Eugen Bognibov, chooses different dominant typical of the landscape of our country - hills, plains, vineyards, roads between hills, meandering rivers -, which he treats mostly in a lyrical-poetic vision. This poetic formula is reflected in idyllic or nostalgic images of the "spatial" landscape, which awakens in the viewer's soul the feeling of greatness of nature in different colorful seasons. [13 - 14].

Figure 3. Eugen Bognibov. a) Suffocating summer; b) The approach of silence; c) Water landscape.



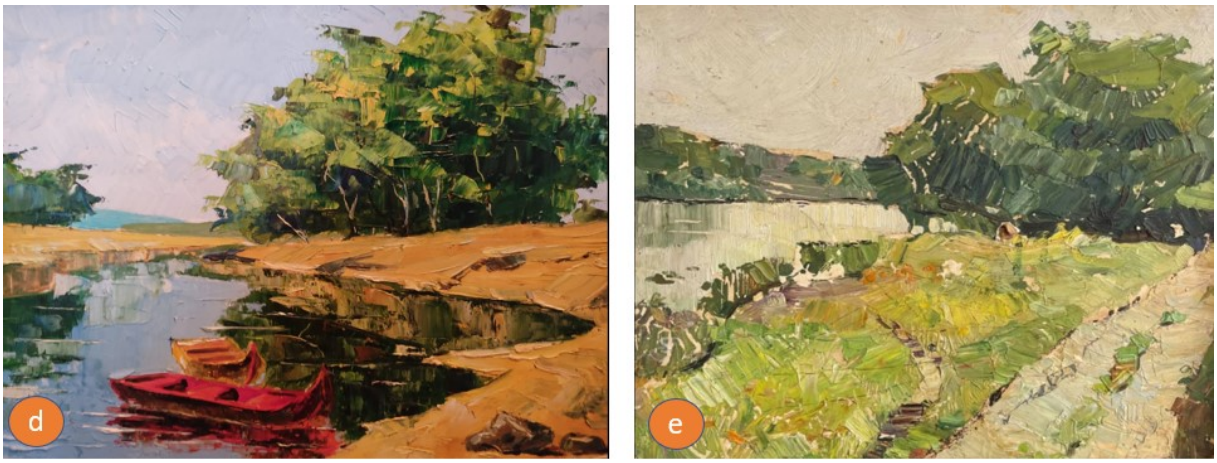


Figure 4. Eugen Bognibov. a) Forest path near Dniester river; b) Autumn landscape; c) On the bank of the Dniester oil / canvas; d, e) Landscapes with water, oil on canvas.

Nature is made up of contrasts: every light has its shadow
/Victor Hugo/

Panoramic works from different picturesque places of Moldova, we observe landscape views: Winter landscapes, ”Figure 5, a, b” panoramic compositions, where the principles of treating the depth of space are modeled through light and shade. Forest landscapes that convey the lyrical-epic state of Moldovan nature and its temperate character with cold colors. The landscape-space identity in the chromatic treatment of the genre in the works of professor Eugen Bognibov emanates the state of lyricism and harmony between man and nature, which is distinguished by the freshness of color [10, 14].

Figure 5. Eugen Bognibov. a, b) Winter landscapes.

The series of landscapes dedicated to the hometown of Chisinau: Morning Chisinau, Urban Landscape, ”Figure 6, a, b, c” represent images with historical monuments of historical architecture, with a rich decorative and stylistic ornamentation. Neighborhoods with one or two level houses in the historic heart of the capital, are "awakened" by the rays of the morning sun, with quiet alleys are flooded with greenery. The streets of the alleys represent the systematization plan of the neighborhoods with rhythmic forms, and in the center of the composition, there is a dominant vertical and the sky studded with floating clouds in spots of faded and warm colors, is the historical picture of national architecture, painted by painter and architect Eugen Bognibov [8 - 10; 13 - 14].

Figure 6. Eugen Bognibov. a, b, c) Morning Chisinau, Cityscape**,** oil / canvas.

Conclusions

In conclusion, we mention that the paintings dedicated to the genre of landscape loved and painted on canvas by Eugen Bognibov, are undoubted, above all, the space and subject of experience, but also the object of aesthetic judgment. The deliberate interpretation of the components - landscape, space, architecture, as terms of harmonious relations, lead to the alignment of a philosophical identity between subject and predicate. The landscape in the author's paintings, with its role of generating the image of plastic space, becomes a source of inspiration for the architect, painter Eugen Bognibov, a source of aesthetic delight, a refuge from everyday life, a way of expressing the viewer's sincere message of their feelings and turmoil. The comparative analysis of landscape works, painted by the author, highlights the major role of the landscape in his artistic creation. This genre, for the master Eugen Bognibov, becomes a passion, which emanates the state of lyricism and harmony between man and nature.

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INTERIOR DESIGN IN THE RESTORATION OF THE NATIONAL MUSEUM OF PLASTIC ARTS OF MOLDOVA

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Abstract. This paper presents a scientific analysis of interior design in the restoration process of the National Museum of Arts of Moldova. The interior design segment is historically researched through the genre of architecture, from the historical compartment of the XIX-XX century. In the same context, several works of various architects who designed important constructions in Kishinev are analyzed. The study highlights the role and responsibility of interior design in the process of restoration and capitalization of the national cultural heritage. It also analyzes the correspondence or synchronization of new implementations in design with the stylistic concept achieved in the historical period.

Keywords: *aesthetics, heritage, renovation, restoration, space, style.*

Rezumat. Lucrarea prezintă o analiză științifică a designului interior din cadrul procesului de restaurare a Muzeului Național de Artă a Moldovei. Segmentul de design interior este cercetat sub aspect istoric prin intermediul genului arhitectură, din compartimentul istoric al secolului XIX - XX. În același context sunt analizate mai multe operele ale diverșilor arhitecți care au proiectat construcții importante în Chișinău. Studiul scoate în evidență rolul și responsabilitatea designului interior în procesul de restaurare și valorificare a patrimoniului cultural național. Deasemeni se analizează corespunderea sau sincronizarea noilor implementări în design cu conceptul stilistic realizat în perioada iostorică.

Cuvinte cheie: *estetic, patrimoniu, renovare, restaurare, spațiu, stil.*

Introduction

The National Museum of Plastic Arts of Moldova is an architectural symbol of major importance for national culture and art. The Museum Building (hereinafter NMPAM) is a historical monument of national heritage, remarkable both for the architectural character of its construction and for its contribution to the artistic atmosphere in the country. The current Museum has a very interesting history: "the urban mansion hosted the girls' high school of Princess Dadiani, built in 1901 according to the plans of the architect Alexandru Bernardazzi, and then, in Soviet times, it had several functionalities, because, in the end , after the abolition of the museum of the communist party, to become the main headquarters of NMPAM "[1].

After a very long and futile process of restoration and rehabilitation works of the museum, the Republic of Moldova benefited amazingly from the support of the Romanian government which financed the consolidation and restoration of the museum's "Dadiani" headquarters (NMPAM). The works continued over 11 years and were successfully completed in November 2016. Today "the building has acquired its original shape" created in the period of 1901 [2].

Visiting the halls of the National Museum of Plastic Arts in Kishinev we are deeply impressed by the aesthetic values, skill and artistic culture of interior architecture. Based on the general concept of preserving the original architectural elements in the reconstruction of the museum building, we direct the given research on the principles of aesthetic formulation and cultural-artistic trends in architecture of the late nineteenth and early twentieth centuries. The study of historical evolution will determine exactly the area of artistic implementations in exterior and interior architecture, stating the character and stylistic concepts of buildings during the study period and the contribution of architects on urban evolution [3, p. 3].

1. Kishinev architecture at the end of the XIX th century and the beginning of the XX century

In order to discern the constructive and stylistic predilections in the practice of interior design from the beginning of the XX century, it is necessary to analyze the general segment or genre of architecture, because the approach to the interior was and is a component of architecture. The term “design” is known in professional language more in the contemporary period, although it has a long history, coming from the Latin verb “designation” [4, p. 5]. The main significance of the design remains the aesthetic design, which designate the complex process of conception and design of functional and beautiful forms at the same time, according to the demands of the present time. [5, p. 136]. Interior design develops and manifests itself through the same aesthetic predilections common to the general sphere of architecture [6, p. 57].

Analyzing the evolution of architecture on the territory of the Republic of Moldova, we notice that at the end of the XIII and the beginning of the XIX century constructions are made in a neoclassical language associated with the Russian “Russian classicism” found mostly in religious places of worship [7, p. 70 - 71]. The neoclassical approach is completed with elements of the classical Greek orders, strictly and generally ordering the constructions. Later, in the middle of the XIX century, when the architecture of Kishinev experienced an intense urban development [8, p. 79], the first implementations of modern styles appeared, advancing nicely towards the beginning of the XX century [9, p. 20]. A stylistic polyphony appears in the urban landscape by applying historical-ethnic data, among which the consecutive trends of: "architectural romanticism", "baroque" with the interweaving of "Renaissance and Gothic" motifs, gradually resorting to the stage of "enrichment" of decorative combinations in aesthetics buildings, observed in an evolutionary consistency until around the twentieth century [10, p. 5].

At the turn of the centuries (XIX-XX) the architecture of Chisinau marks a period of transition from eclectic implementations to Art Nouveau (1900-1910), revealing some oriental motifs in the decoration of buildings (Zemstva Museum, the house of MV Karcevski and others.) [11]. At the same time (early twentieth century), the aesthetic formula of many buildings retains neoclassical, neo-Gothic elements and so-called "neo-Russian"

implementations - specific through the decorative details typical of Russian architecture [12, p. 21]. This category is also known as the "brick style" or "rational" constructions made mostly of white limestone without plaster and carved decoration on facades in favor of "decorating the brick ornament" [3, p. 11]. This aesthetic is found in many buildings in Bessarabia [8].

The list of new modern constructions includes the Penitentiary Building (Prison Fortress) in Kishinev (1843 - 1863) by the architect F. Frapolli, the urban mansion of Râșcanu-Derojinschi by Al. Bernardazzi, Vila Mimi (1880) by Iacov A. Uscat, Boys' Gymnasium no. 1 (1888), District Court (1887) and that of the Assembly of the Nobility in Kishinev (1889) by the Austrian architect Heinrich von Lonsky, Royal School (currently the main block of the State University), the Girls' Gymnasium of Zemstva (1881 - 1882) and the Theological School (1873) by Heinrich von Lonsky and Mihail S. Serotinsky, the Water Towers or the Urban Aqueduct (1890), the Theological Seminary XX) by V.M. Elkașev, Duma and City Public Administration (1900) and others by Chekerul-Kush M. [14], Mitrofan A. Elladi and AI Bernardazzi, Mitrofan A. Elladi Commercial School, Diocesan House, Land Bank (1910 - 1911) after the project of the diocesan architect G.V. Cupcea, The building of the former Community of Charity Sisters from Hârbovăț Monastery (1904-1905), by Vladimir N. Țâganco and many other buildings designed and built by many important architects who contributed to the formation of modern stylistic architecture in Bessarabia [10].

An important impact on the architectural-urban evolution of Kishinev had the architect Alexandru or Alessandro Bernardazzi (02.07.1831 - 14.08.1907), who from 1856 to 1878 was the main person responsible for the urban construction [15, p. 25]. The architect distinguished himself by a “completely new new experience in the context of the reform of cultural diffusion” [3, p. 3]. In its activity was designed and built the second Gymnasium for girls and the chapel of the gymnasium founded by Princess N. Dadiani (from 31 August 1989, no. 115) [13, p. 58]. His aesthetic predilections are based on elegant associations between white limestone masonry and reddish brick, the monumental design of doors and windows, the rhythmic repetitions of shapes, the simplicity of details and the complexity of constructions, which attest to the influences of Italian Gothic. [15, p. 35].

The contribution of these masters in the architecture of Kishinev favored the development of the city at a higher artistic level, becoming "one of the most beautiful in South-Eastern Europe". [3 , p. 3].

2. Interior design in the NMPAM restoration process

Interior design or arrangement of interior architecture is usually carried out in accordance with the architecture of the building and the aesthetics of the facades. The interior of the National Museum of Art is no exception and according to historical data demonstrates a stylistic synchronization with the aesthetic sumptuousness of the facade. This is confirmed in the literature which highlights the descriptive data: „the spacious hall, the magnificent, spectacular or elegant character of the stairs, the immense brightness and spatiality, seem to announce the perfect distribution of the spaces in the huge classrooms. The wide halls, the high ceilings of the classrooms, highlight the interest in ensuring good conditions for students” [15, p. 35] (Figure 1, 2).

The interior space, as well as the facade of the building, is well coordinated compositionally through the monumentally geometrical constructive elements, along with the configuration of doors and windows - made in a Renaissance manner.

Figure 1. Stairs of the headquarters to the reconstruction of the National Museum of Plastic Arts of Moldova.

Figure 2. Stairs of the headquarters after the reconstruction of the National Museum of Plastic Arts of Moldova.

The shapes of the windows are paired, consisting of small dimensions, finished in the upper part by arches, adorned with Gothic weave [10, p. 21] (Figure 3 (a, b, c)). The aesthetic formula of the space is balanced by the massive generalized shapes and decorative plastic that bring an extra delicacy and elegance to the entourage. From historical data (Figure 1) the walls of the rooms were lacking in some places decorative details and allowed to see the structure of white stone masonry, combined with burnt brick, thus following an association with the exterior of the building (Figure 4 (a)).

At the same time, the modeling of the railings and the connections between the ceiling surfaces included a unique ornamental delicacy, which demonstrated the involvement of eclectic and Art Nouveau [12, p. 18], stylistics (Figure 4 (b, c)).

The given implementations are found in the aesthetic interest of the construction because, as the researcher Igor Pecarschi mentions, the construction is "an important monument of the transition period from eclectic to Art Nouveau" [10, p. 20].

a) b) c)

Figure 3. Configuration of windows in the current National Museum of Plastic Arts of Moldova.

a) b) c)

Figure 4. Combinations of materials and plastic invoices in the current National Museum of Plastic Arts of Moldova.

By definition Art Nouveau or Art 1900, it seeks "a synthesis of all the arts as a response to eclecticism and an international style" [16, p. 29). According to the known data for the initiation of the researched construction (1901), it can be seen that in the first years of the early XX century interior design in Bessarabia experienced a modern evolution, extremely refined, synchronized with contemporary European trends, and free and very sensitive management. of these artistic tendencies in the inner entourage speak of an evolved noble culture present in the intellectual environment of the country.

The restoration of the current Museum of Fine Plastic in Kishinev (headquarters) carried out over eleven years (until 2016), after the project of architect George Bulat, primarily aimed at renovating specific traditions of national architecture from the early twentieth century (1901), demonstrated in this building. The works were carried out to correspond as closely as possible to the historical prototype of the building (Figure 5 (a, b)). Fully respecting the historical reminiscences of the interior: eclectic ornamentation, baroque medallions, columns, Greek meanders, Art Nouveau chandeliers, etc., however, the contemporary architect involves in a very subtle way some postmodern solutions.

a) b) c)

Figure 5. (a, b) Restoration works in the National Museum of Plastic Arts of Moldova; (c) Stylistic combinations in the ornamental decoration of the National Museum of Plastic Arts of Moldova.

Fully respecting the historical reminiscences of the interior: eclectic ornamentation, baroque medallions, columns, Greek meanders, Art Nouveau chandeliers, etc., however, the contemporary architect involves in a very subtle way some postmodern solutions.

These can be seen in the constructive decisions of the stairs, the materials used to complete them, the construction on the second level of the headquarters, etc., which bring an imprint of the current time in combination or complementing the historical values of the national heritage (Figure 5 (c)).

a) b) c)

Figure 6. (a, b, c) Modern-contemporary implementations in the restoration of the National Museum of Plastic Arts of Moldova.

The solutions proposed in the interior design of the Museum provide at the same time the preservation, capitalization of historical data and their coordination with the current norms of interior design. The harmonious arrangement of the contemporary interior aims at the optimal realization of various problems: rational use of space, ensuring circulation, sufficient lighting, sound insulation, ergonomic solution of furniture, creating a favorable climate, ensuring appropriate color combinations, judicious use of textiles, reasonable involvement of aesthetic decoration, etc. [15, p. 128]. All these elements have been skillfully analyzed and solved inside the current interior of the Museum, additionally using the most advanced air conditioning systems, safety and security of the rooms in accordance with the moderate global provisions for such buildings (Figure 6 (a, b, c)). Following the reconstruction works, a refined aesthetic ambiance was obtained, extremely luxurious, elegant and at the same time true to the historical prototype, much improved by the constructive, engineering and modern aesthetic possibilities, which ensure a noble resonance to the historic building.

Conclusions

The Museum of Plastic Arts of Moldova after the restoration works is brought back into the cultural-artistic view of the country. The aesthetic data of the interior and exterior architecture of the building speak of a high socio-cultural level existing in the Bessarabian environment at the junction of the 19th and 20th centuries. In the process of restoring the national heritage, interior design occupies an important place, assuming the responsibility of restoring the constructive and aesthetic values of historical architecture. At the same time, the interior design project resorted to a process of correlating historical traditions with

contemporary ones, involving current solutions in finishing techniques, construction materials, plastic modeling of current forms and norms in the field. The plastic approach of the interior design respectfully preserves the incipient stylistic formula of the building, completing at the same time the aesthetic concept through associated modern and postmodern interventions.

Following the famous restoration of the National Museum of Plastic Arts of Moldova, thanks are due to the Romanian Government, the Ministry of Culture of Moldova, then Minister of Culture Monica Babuc, the director of the Tudor Zbârnea Museum, the architect George Bulat and all those involved in this work.

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PROCESS WRITING APPROACH IN ENHANCING HIGH SCHOOL STUDENTS' ESL WRITING COMPETENCY

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Abstract. This study was conducted to determine the impact of using process approach in writing narrative composition for Senior High School students who were taking Reading and Writing subject. It focused on determining students' progress in writing narrative composition in terms of organization, coherence, appropriate language use, and mechanics. The study used quasi-experimental one-group pretest-posttest design wherein the respondents, who were chosen through total population sampling, underwent pre-test in which they were tasked to write narrative composition using traditional approach. Process writing approach was implemented with the use of activity manual as teaching- learning guide wherein the final output was evaluated as post-test of the study. Based on the findings, Senior High School students were not competent in writing narrative composition especially in terms of coherence, appropriate language use and mechanics using traditional approach. But with the use of process writing approach, the students were assessed to become proficient in four writing competencies. Thus, the study recommended the use of process writing approach as it was found effective in enhancing students' competency in writing narrative composition.

Keywords: *English, narrative composition, process writing approach, writing competency.*

Rezumat. Acest studiu a fost realizat pentru a determina impactul utilizării abordării de proces în scrierea compoziției narative pentru elevii de liceu care urmau disciplinele Citire și Scriere. S-a concentrat pe determinarea progresului elevilor în scrierea compoziției narative în ceea ce privește organizarea, coerența, utilizarea adecvată a limbajului și mecanica. Studiul a folosit un design cvasi-experimental, pre-test - post-test, într-un singur grup, în care respondenții, care au fost aleși prin eșantionarea populației totale, au fost supuși unui pre-test în care au fost însărcinați să scrie o compoziție narativă folosind abordarea tradițională. Abordarea procesului de scriere a fost implementată cu utilizarea manualului de activități ca ghid de predare-învățare, în care rezultatul final a fost evaluat ca post-test al studiului. Pe baza constatărilor, elevii de liceu nu erau competenți în scrierea

compoziției narative, în special în ceea ce privește coerența, utilizarea adecvată a limbajului și mecanica, folosind abordarea tradițională. Dar, prin utilizarea abordării procesului de scriere, elevii au fost evaluați să devină competenți în patru modalități de scriere. Astfel, studiul a recomandat utilizarea abordării procesului de scriere, deoarece a fost găsit eficient în îmbunătățirea competenței elevilor în scrierea compoziției narative.

Cuvinte cheie: *engleză, compoziție narativă, abordare proces de scriere, competență de scriere.*

Introduction

Across generations, numerous pedagogical strategies have evolved especially in the field of language teaching. Despite methodological innovations, writing remains to be a complicated area for English as a Second Language (ESL) learners. [1] posited that students perceive writing more difficult than other macro-skills for it requires productivity. Through extensive research, most ESL teachers have developed state-of-the-art approaches to aid student difficulties in writing. One of which is the process approach which several researchers accentuated as the scheme for effective writing for it pays attention to the development of writing practices. This approach has become effective to writing classrooms because it provides students with flexibility, practicality, and applicability [2].

Process writing approach is a systematic approach to writing where language teachers concentrate on evaluating students' writing performance during the stages of developing their output rather on the product itself. [3] explicated that writing process comprises stages such as (1) prewriting, (2) drafting, (3) revising, (4) editing and proofreading, and lastly (5) publishing and presenting. Various studies substantiate that using the stages of the writing process help students convey their thoughts in compositions for they are provided with ample time and opportunity to accomplish well- written outputs with the assistance of the teacher as facilitator of the learning methodology.

Moreover, being learner-centred is one of the best features of this writing approach. It is where teachers play the role of being facilitators. [4] explained that writing is a skill that is being learned and not being taught that is why teachers' duty is to facilitate the writing stages. Each step has corresponding techniques that are being recommended by the teacher to the students to have a well-thought-out output. Consequently, learners' writing potentials will be brought out.

In the emergence of K to 12 programs in the Philippines, the Department of Education primed writing courses in Senior High School level to develop students' advanced writing skills. Additionally, students are expected to perform varied levels of writing competencies in which they are tasked to focus on the effective utilization of language and articulation of ideas and experiences in their compositions.

Relevantly, [5] stated that with an increase in attention to the practical needs of students of present generation, functional and interactive approach of writing should be applied and developed. Therefore, teachers should adapt applicable approaches, like process writing. This approach aims to develop students' writing competencies particularly organization, coherence, appropriate language use, and mechanics which are specified in the Department of Education's [6] Reading and Writing curriculum guide as properties of well-written text.

However, based on students' background in writing compositions, most of their writing teachers used traditional strategy of instruction wherein students are tasked to accomplish texts focusing on the finished product and not on the process of developing their output. This

approach on reproducing writing models disregards teacher's input and discourages students' creativity [7].

Reading and Writing is one of the core subjects in senior high school that clearly aims to develop learner's writing skills. The students are expected to produce compositions that should follow the properties of well-written text. These are organization, coherence, appropriate language use, and mechanics. However, students encounter problems in working out their writing tasks due to their weak foundational skills and interest in writing.

In usual language classes in the country, students are just engaged in product- based learning especially in writing composition and other written tasks. They encounter jeopardy in writing in the absence of the functional and organized writing practices and activities for teachers view product approach as practical teaching-learning strategy. From various research, teachers most often choose an approach that can ease their task effectively in teaching writing and introducing text-types to finish the course objectives on time. As a result, the students become dependent writers especially in familiarizing model essays and accomplishing writing activities [8]. Aside from that, some writing classes are still confined with traditional practices. Teachers' evaluation of students' written products only focuses on the formal features in which accuracy are all important where prewriting and developing the text based on the errors are being overlooked. [9] emphasized that these classroom conditions result to unsuccessful acts of writing and consequently, unsuccessful text.

Most ESL classrooms utilize traditional approach in their writing classes wherein they are expected to build up highly structured texts without activities that will help them to choose topic, generate ideas, gather details, outline, revise, edit, and finalize their outputs. These stumbling blocks may cause vague purpose in writing and obscure presentation of ideas based on particular issue of discourse. This is supported by [10] who revealed that mechanics, language use, and organization are the prime problems of Filipino ESL students in writing especially in terms of word choice, grammar, and punctuation.

This issue is particularly true to the case of Senior High School students in a Private School in Majayjay, Laguna, Philippines. They are among those who experience the difficulties in writing composition. To conform towards the challenges and standards of present educational system, process writing approach is assumed to be effective and profound approach in developing students' writing skills. It is where the students convey their ideas in written form through complex, indeed systematic process.

For the attainment of expected outcomes of the Reading and Writing subject, the study was conducted in which the results were anticipated to become basis in developing students' writing skills. Generally, the study sought answer to the question: Did the use of process approach have an impact on writing narrative composition of Senior High School students who took Reading and Writing for the school year 2017-2018?

The study specifically: (i) determined the students' level of writing competency in writing narrative composition in terms of organization, coherence, appropriate language use, and mechanics before and after the implementation of process writing approach; (ii) analysed the pre-test and post-test scores in writing narrative composition in terms of organization, coherence, appropriate language use, and mechanics; and (iii) evaluated the effectiveness of the learning activity manual in the following stages of process writing approach: a) prewriting, b) drafting, c) revising, d) editing and proofreading, and e) publishing and presenting.

Process Writing Approach

As a thought-provoking and methodical approach to writing, process writing approach is viewed by several research as a valuable tool to the learners for they are being provided with opportunities that could develop writing practices and skills. They are being engaged in accomplishing writing tasks offered by each stage to come up with well- written composition.

According to [9] the process writing approach treats writing not as a completed product but as a process. [11] stated that writing as a process allows time for the prewriting and drafting and encourages students to revise and edit their work. As the teacher demonstrates the steps one by one, students will be able to have an in-depth understanding of the writing process.

Likewise, Tribble [5] defined the process approach as "an approach to the teaching of writing which stresses the activity of the individual writer, and which pays attention to the development of good writing practices rather than the imitation models". By breaking down the task into its constituent parts, writing is greatly less intimidating and more practicable for the students. The stages generally involve different forms of brainstorming, selecting, and ordering ideas, planning, drafting, redrafting, and revising and editing. This not only provides the student writer and the teacher with a practical and manageable framework within which to work through the writing process, but also allows for great flexibility, depending on each individual task and the personality and preferences of each individual writer.

Process writing approach assists ESL students, whatever their ability level, improve their writing in different genre [12]. In addition, it values talents, capabilities, and growth of individual writers. [13] explained that process writing approach helps to bring about positive changes in the most students' attitudes towards writing and improvements in writing habits. Furthermore, [14] pointed out that an important element of process writing approach is the meaningfulness and functionality it brings to the learners, who make a personal connection to the topic and come to understand the processes they follow when writing about it.

Bonesall [15] enumerated and explained distinct stages of composition: (1) *Prewriting* where the writer gathers information and plays with ideas. [16] shows that students who experienced array of prewriting activities have greater writing achievement. (2) *Drafting* where the writer develops his/her topic on paper that focuses on content rather than mechanics; (3) *revising* where the writer changes what is necessary in terms of organization, coherence, and language; (4) *editing* where the writer polishes the draft and gives attention to mechanics; and (5) *publication* where the writer delivers the writing to its target audience. [15] underscored that to have a well-thought-out composition, students should pay attention to the process and the properties of well- written text at the same time.

[17] posited that writing in process approaches is seen as predominantly to do with linguistic skills, such as planning and drafting. There are different views on the stages that writers go through in producing a piece of writing, but a typical model identifies four stages: prewriting, composing, revising, and editing. This is a cyclical process in which writers may return to prewriting activities. A typical prewriting activity in the process approach would be for learners to brainstorm on the topic. At the drafting stage, they would select and structure the result of the brainstorming session. After discussion, learners might revise the first draft individually or by group. Finally, the learners would edit or proofread the text. The whole process is facilitated by the teacher.

Specifying the advantages offered by process writing approach, [18] enumerated the following: (1) It focuses on the process, not on the final product; (2) It finds a real audience;

(3) It offers a variety of techniques; (4) The teacher plays the role of guide, facilitator, and reader; (5) Student's role is one of sharing and collaborating; (6) Grammar is a tool – a means, not an end; meaning is essential, not form; (7) It is a creative process; and (8) Evaluation and feedback are given permanently, not only at the end.

There are more potential advantages of using process writing approach as stated by [19]. First, students are encouraged to plan, draft, and revise. Second, instruction in writing through mini-lessons, conferences, and teachable moments result in improved quality of writing. These teaching tools also provide mechanisms for addressing the instructional needs of the individual students. Third, motivation for writing should be enhanced as collaboration, personal responsibility, personal attention, and the positive learning environment are stressed.

Materials and Methods

Research Design

The study used quasi-experimental one-group pre-test-post-test design to determine the impact of process writing approach on a given sample of students. A single group of Senior High School students was pretested, and they were tasked to write narrative composition using traditional approach (product-based). Given some treatment or intervention such as the use of process writing approach, they were post-tested. If the pretest and posttest scores differed significantly, then the difference may be attributed to that treatment or intervention which is the process writing approach.

Subjects of the Study

The subjects of the study were purposively chosen 53 Grade 11 students from a Private School in Majayjay, Laguna, Philippines. They were from two heterogeneous classes who took Reading and Writing subject. Through total population sampling, 26 students from Grade 11-St. Augustine and 27 from Grade 11-St. Basil experienced process writing approach in their subject Reading and Writing.

Instrumentation

Parallel pre-test and post-test rubrics were used to identify the students' scores in their narrative written tasks. Based in Reading and Writing curriculum guide provided by DepEd [6], this tool contains components that evaluate student's written outputs in both tests such as organization, coherence, appropriate language use, and mechanics. The standards used in measuring the students' writing performance were Poor, Developing, Proficient, and Advanced. The pre-test tasked the students to write a short story using the traditional approach while post-test engaged the students to write short story using process writing approach. Both outputs were evaluated through the rubrics that were adapted from [20] rubrics in scoring students' composition. The rubrics were validated by high school and college language teachers and were found appropriate for the scoring of the students' composition.

Another instrument used was learning activity manual that was planned, designed, and implemented. This served as teacher's and learner's guide in facilitating the activity and writing the short story respectively. It underwent validation to see its applicability in the language class.

Lastly, the survey-type questionnaire was used as tool in revealing students' perception on the effectiveness of the learning activity manual in the following stages of

Process Writing Approach: prewriting, drafting, revising, editing, and proofreading, and publishing and presenting. The checklist questionnaire was constructed based on extensive literature taken from printed and online sources.

Experts' assistance was sought for validation of all the instruments used. In particular, the instruments undergone face validity where they were reviewed by two different parties. The first group was consisted of three English language education specialists. They evaluated the questions/statements and made sure that each question/statement successfully captured the research topic and problem. The second review was done by a statistician who ensured that the scoring was accurate and the survey and did not contain common errors such as leading, confusing, or double-barreled questions/statements. The researcher also run a pilot test of the survey and reviewed the internal consistency of questions by conducting the test of reliability with test-retest to a group of 20 Grade 11 students from another private school. The administration of retest was three weeks after the first test. Likewise, the Cronbach-Alpha method was applied, and the result got a total test and retest scores (0.76 and 0.78) with a reliability factor of 'acceptable'.

The following procedures on administering the instruments were discussed in detail:

Interview. Before the conduct of the study, the researcher asked the classes about their background in writing composition, the teaching approach used by their previous language teachers as well as their strengths and weaknesses in writing. One hundred per cent of the students utilized traditional approach in writing during their junior high school and did not experience process writing approach.

Pretest. The researcher conducted a pretest wherein students were tasked to write a narrative composition specifically short story using the traditional approach of writing that they all experienced in their previous years of writing composition. The outputs were evaluated by two English teachers using the adapted rubrics.

Implementation of Process Writing Approach Activity Manual. The manual served as students' guide in writing narrative composition. It also introduced them how process writing approach works so their perception to the approach would be revealed and their interests would be determined.

Design. Before the implementation of the learning activity manual, design and development of the instructional material were done to make the teaching-learning process well-planned and organized. In design stage, the researcher prepared a lesson plan regarding writing narrative text specifically making a short story. The learning plan is patterned on the K to12 Curriculum Guide for Grade 11 Reading and Writing subject with learning competency— distinguish among patterns of development in writing across disciplines: narration, description, definition, classification, comparison and contrast, cause and effect, problem solution and persuasion.

Development. In terms of the development and construction of the process writing approach activity manual, the researcher first identified the objectives which were parallel in the learning plan. Research was done for the content, strategies, flow of the lesson, and rubrics. Then, the researcher designed and developed the activity manual containing the following parts of the material: cover page, preface, attribution, table of contents, lesson proper, stages of writing, written output rubrics, and appendices. The structure of the material was patterned from [3] process writing book entitled Prentice Hall Writing and Grammar.

Implementation. The researcher implemented the process writing approach activity manual to Grade 11 Reading and Writing students for three consecutive days. All the activities

in the manual were facilitated by the researcher and were accomplished based on the target schedule.

Posttest. The output that the students produced in the process writing activities served as posttest. The written output was evaluated by same two English teachers through the same rubrics used in the pretest. The results of pretest and posttest were subjected to appropriate statistical treatment for interpretation.

Administration of Survey-type Questionnaire. In another session, the researcher administered the questionnaire. One hundred per cent retrieval of questionnaire was ensured. Afterwards, the transcription of the surveys and analysis of results of the study were done using quantitative method. Data were tallied, tabulated, analyzed, and interpreted using appropriate statistical tools.

Data Analysis

Descriptive statistics such as mean, percentage and standard deviation were used to analyse the data obtained from the questionnaires. The mean of the students' scores were used in presenting and analysing the difference between the pre-test and post-test scores in writing narrative composition. The standard scores in the rubrics were used for the analysis which were categorised as Poor, Developing, Proficient, and Advanced. Concerning the perception of students on the effectiveness of the learning activity manual used in implementing the process writing approach, the five-point Likert scale ranging from needs improvement (1) to superior (5) was used.

Results and Discussions

Students' Level of Writing Competency in Writing Narrative Composition

Finding shows that the mean of the pre-test total scores of Grade 11 students in writing narrative composition before using process writing approach were generally proficient (Table 1). In particular, 36 per cent (n=53) of the students were in proficient level, 30 per cent (n=53) were in developing level, 19 per cent (n=53) were in the poor level, and 15 per cent (n=53) are in advanced level. The students were proficient in terms of organization with mean of 10.9. Further, the students' levels of competency regarding coherence, appropriate language use, and mechanics were developing with weighted means of 10.5, 9.77, and 9.98 respectively. The results imply that most of the students have struggle in writing in all aspects especially appropriate language use and mechanics which gained the lowest means.

Table 1

Students' level of writing competency in writing narrative composition

	$\bar{x}$	General Assessment Verbal Interpretation	SD
Organization	10.9	Proficient	3.65
Coherence	10.5	Developing	3.70
Appropriate Language Use	9.77	Developing	3.83
Mechanics	9.98	Developing	3.67
Overall Weighted Mean	41.2	Proficient	14.46

Range: General Assessment (1-5 Poor; 6-10 Developing; 11-15 Proficient; 16-20 Advanced); Total Scores Mean (1-20 Poor; 21-40 Developing; 41-60 Proficient; 61-80 Advanced).

This affirms the study of [21] who found language use and vocabulary aspects as the most difficult among the students in writing English. Next to these were the organization and mechanics aspects.

From the researchers' initial interview with the respondents, most of the students mentioned that included among the problems they encounter in writing compositions were sentence construction, grammar, and punctuation. This supports the studies of [22] and [10] who found out that students struggle mostly in vocabulary and mechanics. Students find it difficult to express their ideas and thought to the paragraph writing and so they make many grammatical mistakes in their writing [23]. In fact, vocabulary has been found to have an important role in the quality of written outputs [24 - 25]

Students' Progress in Writing Narrative Composition

Table 2 shows that the overall level of students' writing competency after using process writing approach was proficient with total scores mean of 55.85. Specifically, the students' writing performance with the use of process writing approach was proficient in all four criteria which are organization, coherence, appropriate language use, and mechanics with the mean of 14.26, 14.15, 13.53, and 13.91. This study coincides with the findings of [18] which explains that the implementation of process writing approach activities is a 'communicative experience' that encourages learners to practice and develop their writing skill in a controlled situation which in turn provides good results. Also, [26] concluded that process writing approach is an effective strategy to improve writing for it uses several writing instructional activities that stresses extended writing opportunities, writing for authentic audiences, and personalized and interactive teaching-learning process.

Just like in pre-test, appropriate language use still has the lowest means which implies that there were still students who struggle in terms of grammar and vocabulary. This supports the study of [22] who found developing ideas and grammar as the main problem for English Education Department students. This was followed by use of vocabulary and language expressions. Similarly, the Grade 11 students had difficulties with producing grammatically correct sentences and of using appropriate words in their academic writing.

Table 2

Students' Progress in Writing Narrative Composition

	$\bar{x}$	General Assessment Verbal Interpretation	SD
Organization	14.26	Proficient	2.47
Coherence	14.15	Proficient	2.36
Appropriate Language Use	13.53	Proficient	2.82
Mechanics	13.91	Proficient	2.57
Overall Weighted Mean	55.85	Proficient	9.92

Range: General Assessment (1-5 Poor; 6-10 Developing; 11-15 Proficient; 16-20 Advanced); Total Scores Mean (1-20 Poor; 21-40 Developing; 41-60 Proficient; 61-80 Advanced).

The students' progress in writing narrative composition is evident because 57 per cent (n=53) of the students were in proficient level, 32 per cent (n=53) were in advanced level, 11 per cent (n=53) were in developing level, and none of the students is in poor level.

The findings are in congruence with the study of [2] which stated that students can manage the organization of their composition for they were provided with activities wherein

they have the chance to think as they write. However, the study also underscored that the concern of students towards process writing approach is that grammar and structure is not the prime focus of the writing process. Further, based on the observation of the researcher during the implementation of the manual, the students easily organized their thoughts in writing and presented clearly their ideas because of prewriting activities. Though, there were few students who asked for assistance for them to have grammatically- correct and well-structured sentences. In all, using process writing approach is a great help for the students in improving their writing skills. [13] explained that process writing approach helps to bring about positive changes in the most students' attitudes towards writing and improvements in writing habits.

Analysis of Pre-test and Post-test Scores in Writing Narrative Composition

Evident in the Figure 1 that the post-test scores in organization, coherence, appropriate language use, and mechanics were higher than pre-test scores. The results imply that using process writing approach is effective and can contribute to the development of students' level of writing competency.

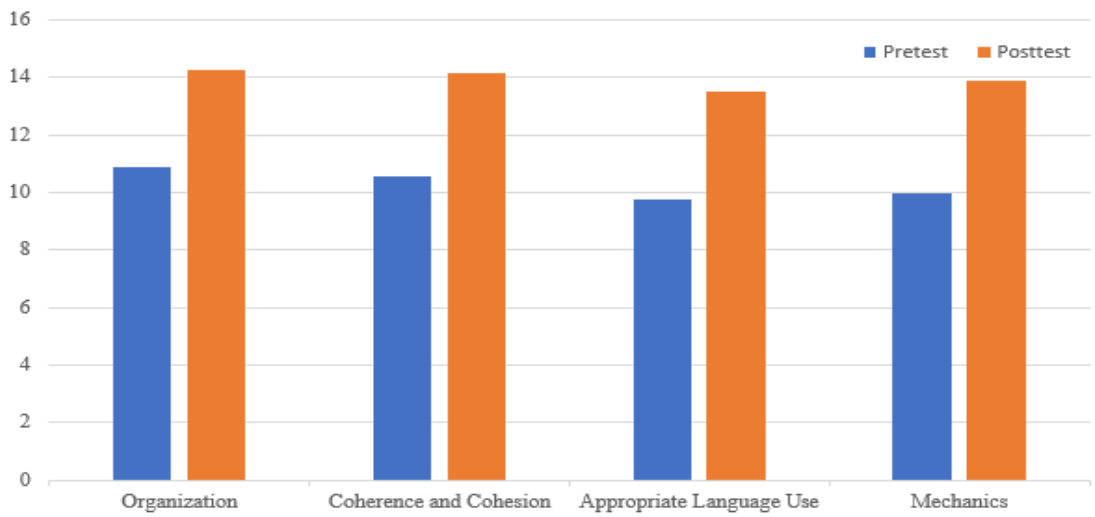

Figure 1. Means of Pretest and Posttest Scores.

The students were proficient in terms of organization and developing level in terms of coherence, appropriate language use, and mechanics and after using process writing approach, they became in proficient level along with organization. Indeed, process writing approach had a significant effect on students' writing success [9].

The researcher observed during the implementation that the students find writing less problematic with the use of process writing approach for they applied strategies in planning and developing their compositions. Most of the respondents commented that process writing approach helps them to write a story that is clear and understandable for the target readers.

The result of the study accords with the study of [27] which posited that process writing approach can minimize writing difficulty for it serves as a tool in structuring students' composition with interesting and well-framed content. In addition, the teacher-student interaction throughout the writing process provides direction for them to achieve the lesson objectives. This also supports the conclusions drawn by [9], [28 - 32] who explained that process writing approach affected students' writing success in a positive and statistically significant way. Collaboration with their classmates and their teacher, texts contain leads to fewer errors because they play vital roles in improving their written output.

Effectiveness of Learning Activity Manual

Table 3 shows that the overall level of effectiveness of the learning activity manual as assessed by the students is superior ($\bar{x}$=4.60). Specifically, the results show that the effectiveness of the material's activities and strategies under prewriting, drafting, editing, and proofreading, and publishing and presenting were superior with mean of 4.64, 4.57, 4.61, and 4.73. While in terms of revising, the students' assessment was above average ($\bar{x}$=4.46).

The findings imply that the activities and strategies used in the manual were effective enough to achieve the objectives of the lesson and guided students meaningfully in accomplishing their narrative composition. Further, the designed learning material contributed greatly to the progress of students' writing competency in which each stage of process writing approach became beneficial for them in accomplishing their composition. This is true given that the process writing approach treats writing not as a completed product but as a process [9]. It focuses on the student in writing compositions, and the teacher only acts as a guide.

Table 3

Level of Effectiveness of Learning Activity Manual

	$\bar{x}$	General Assessment Verbal Interpretation	SD
Prewriting	4.64	S	0.78
Drafting	4.57	S	0.07
Revising	4.46	AA	0.13
Editing and Proofreading	4.61	S	0.19
Publishing and Presenting	4.73	S	0.07
Overall Assessment	4.60	Superior	0.10

Range: 4.50 – 5.00 Superior (S); 3.50 – 4.49 Above Average (AA); 2.50 – 3.49 Average (A); 1.50 – 2.49 Below Average (BA); 1.00 -1.49 Needs Improvement (NI).

The findings of the study support [33] who concluded that through process approach, the students were able to make use of the pre- writing stage to explore, link and generate new ideas. Also, different stages of the writing process (pre-writing, drafting, revising, editing, and publishing) provided the students with an opportunity to improve their writing in terms of organization of ideas and mechanics of writing.

Conclusions

The findings reveal that using traditional approach in writing, the level of writing competency in writing narrative composition is proficient in terms of organization and developing in coherence, appropriate language use, and mechanics. Their overall level of writing competency is proficient but near to developing level because majority of the students find difficulty in grammar, vocabulary, and punctuation.

However, after the implementation of the process writing approach activity manual, the results show that the level of students' writing competency became proficient. Thus, the study recommended the use of process writing approach in writing narrative composition for it is found is effective in helping students to enhance their competency in writing narrative composition. It is also recommended for English teachers to: (i) make use of process writing approach in teaching writing of various text types for them to help students effectively in

developing written outputs; (ii) utilize more relevant, interesting, and useful materials to enhance students' writing competency with regard to their needs and interests; (iii) improve the activity manual especially activities under revising stage to have more effective guide in writing narrative text; (iv) identify the strengths and weaknesses in writing composition of every group of students for them to become guided in choosing teaching-learning materials; (v) monitor regularly the performance and progress of the students to see if the strategies and materials are effective tools in teaching; (vi) integrate other interactive and interesting writing approaches that will make students motivated in developing their writing skills; and (vii) evaluate and revise the learning material based from the needs of the target students.

The support of the school administration in developing pedagogical methodologies provides strong motivation for the students and teachers to attain excellence in writing. For them to make it happen, they are suggested to: (i) strengthen programs especially language courses or subjects that focus on writing skills; (ii) organize academic and co-curricular activities that will enhance students' language competencies; and (iii) produce the needed learning material made available in good quality and sufficient quantity. By exposing their teachers to various training and seminars, they will be equipped with the knowledge and skills on innovative pedagogical techniques needed to enhance the student's writing competency.

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ASPECTS OF ASSESSMENT OF STUDENTS' ACTIVITY IN THE SEMINAR CLASSES: PROBLEMS AND SOLUTIONS

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Abstract. Given paper is presented as a theoretical-applied study that falls within the scientific dimensions of the theory and methodology of didactic evaluation. The author uses descriptive and analytical research methods; comes with the literature review relevant to the stated topic; describes a formative assessment tool based on applying criteria and descriptors that could be implemented in the educational activities specific to the seminar classes within the university study programs with specializations in the field of Computer Science and ICT, but not only. The research's aim is to provide the university teachers and, not only, some methodological guidelines that would support them in developing and implementing a personal, descriptive tool for measuring the activity of the learner in the stated didactical circumstances.

Keywords: *evaluation grid; evaluation tool; evaluation descriptors; evaluation criteria; authentic evaluation.*

Rezumat. Prezenta lucrare se relevă a fi un studiu teoretico-aplicativ care se încadrează în dimensiunile științifice ale teoriei și metodologiei evaluării didactice. Autorul utilizează metode descriptive și analitice de cercetare; vine cu revizuirea literaturii de specialitate relevantă temei enunțate; descrie un instrument de evaluare formativă bazat pe criterii și descriptori care ar putea fi implementat în cadrul activităților educaționale specifice lecțiilor de seminar în cadrul programelor de studii de la specialitățile cu profesionalizare în domeniul Informaticii și TIC, dar nu numai. Scopul cercetării este de a oferi cadrelor didactice universitare, dar nu numai, unele repere metodologice care i-ar sprijini în elaborarea și implementarea unui instrument personal, descriptiv de măsurare a activității celui care învață în circumstanțele didactice enunțate.

Cuvinte-cheie: *grilă de evaluare; instrument de evaluare; descriptori de evaluare; criterii de evaluare; evaluare autentică.*

Introduction and description of the research problem

In the current grading sheet, implemented at Technical University of Moldova (TUM), there are several positions that document the dynamics of student success until the final test.

Depending on the presence/absence of a year thesis in the discipline for which the list is completed, at the stage prior to the final evaluation, there are either 3 positions to be completed or 4.

In one of the formulas for calculating the final grade for a course for which no course year theses (there is a type of junior paper in the Republic of Moldova's universities) are provided previous of the final assessment, 4 grades appear, namely: periodic assessments 1 and 2; the current evaluation and the individual work of the student, for which according to the meaning of TUM, again the truncated average mark of the two evaluations is registered, of the current evaluation, but this time also of the individual work of the student.

In fact, the periodic evaluations 1 & 2 (we attest here an error regarding using of terminology) are organized and carried out strictly in accordance with the institutional documents for the management of the didactic process and, respectively, with the schedule established by the dean's office.

With the grading of the compulsory assessments 1 & 2, named by some internal documents of TUM as periodicals, and also with the grading of the individual work of the student the situation is relatively clear. But for us as tenured teachers remaining questions are:

(1.) How should we to give the grade for the current assessment?

(2.) What kind of formative components have to include the grade given during the current evaluation?

For teachers with major experience, it is not a problem to give a mark in that compartment. So that given grade should and will represents the cumulation of activities and / or student success as an overview of the course, seminar and / or laboratory lessons, individual work, degree of responsibility demonstrated level of creativity and complexity in solving problems distributed by the teacher; in some cases, even the attendance and the number of absences from lessons, etc. are taken into account.

In fact, other important points from the teacher's perspective can be mentioned here. Even if such a grading is successful and it is objective, there is a probability here that the student and / or the parent and / or the curator of the group etc. could have some questions about how the way in which given mark was established and what kind of indicators (most likely people interested in the fate of our student will use another expression) allowed the measurement and subsequent grading with a certain mark.

However, we consider necessary the existence of methodological indications that would facilitate the measurement and grading of student activity in teaching situations that do not end, literally, with the creation / issuance of a finished product, such as: oral speeches, frontal debates, oral argumentation (e.g.: choosing a solution, etc.), presentation and / or verbal explanation, participation in the didactic conversation, conference and / or interview, etc., most of the methods listed being applied to seminar classes, etc.

In this order of ideas, the purpose of our research is to provide the university teacher and, not only, some methodological guidelines that would support him in developing and implementing a personal, descriptive tool to measure the activity of the learner in teaching circumstances with predominant use of oral didactic methods.

Thus, **in this paper we pursue the following objectives:**

(1.) To analyze the current situation regarding the measurement and grading of the student's activity at the seminar classes from Faculty of Computers, Informatics and Microelectronics (FCIM), TUM;

(2.) To propose and describe some solutions for measuring and grading the student's activity at seminar classes in the context of assessing / evaluating the knowledge of the student through oral communication methods in order to further implement in appropriate teaching situations.

Review of the specialized literature

A. Notional fields and approaches related to didactic evaluation

Confusions and / or inappropriate uses of terms related to forms of didactic evaluation are often encountered at the young teachers / parents / students and other categories of trainees. Over time, several researchers have tried to combat the incorrect use of notions related to didactic evaluation, motivating their research by various arguments. However, the basic one argument is the one formulated by Bill Ussher & Kerry Earl (2010) made after the previous documentation from about 21 sources, some of which belong to:

- the main consultant of Evaluation Associates Ltd in Auckland, New Zealand - Absolum, M. (2006; 2009);
- consultant, trainer and researcher in the field of didactic evaluation; the honorary alumna of PhD school at the University of Greenwich (2007) - Clarke, S. (2005; 2008).

The both researchers affirm: "[...] the common shortening of the full and meaningful terms, 'assessment for formative purposes' and 'assessment for summative purposes' [...] contributes to a confusion over assessments, information and methods, particularly for pre-service teachers and those with less teaching experience.

By being well-informed about both purpose and assessment activity, teachers will have greater clarity in understanding, communication and practice regarding these important and useful concepts" [1].

Regarding the types of didactic evaluation, in general, these are classified according to criteria such as: the amount of verified information; objectivity of grading; the reference system for issuing value judgments on evaluated results (IVJER); evaluation agents; the moment when the evaluation is performed distinguishes three forms of it (see Figure 1).

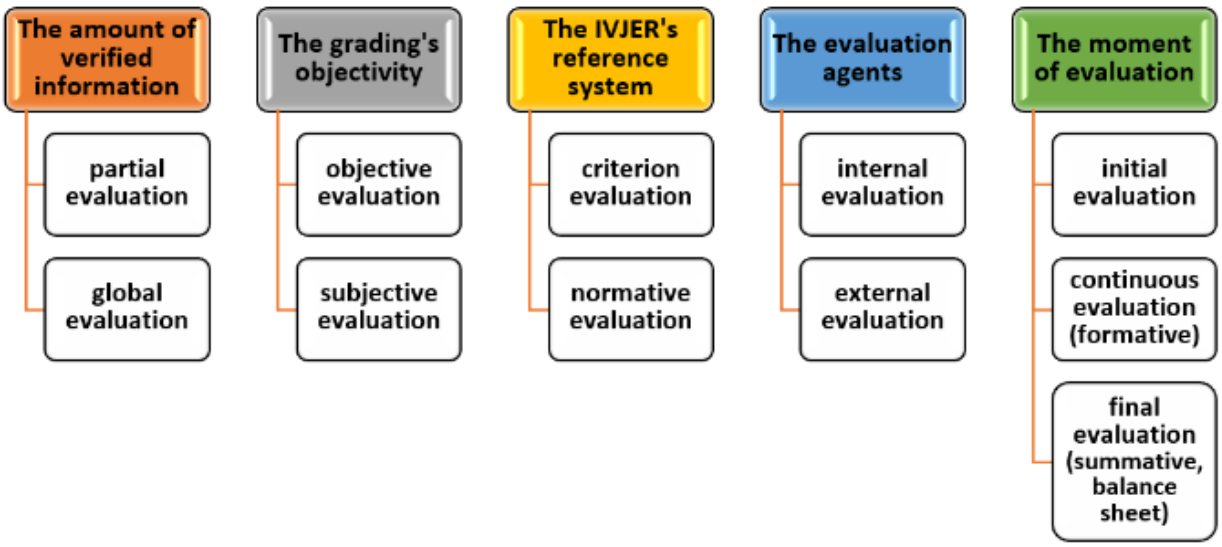

Figure 1. Taxonomy of didactic evaluations.

Our study aims to implode some ambiguities regarding the implementation of the terms related to the time / moment when the evaluation is organized and carried out in a study discipline during the semester and / or year of studies. Besides the fact that the formative evaluation is different from the others by its placement in the order of succession in time within a course, it also has other distinctive features which make it to be different from a didactic and methodological point of view from other forms of evaluation (initial and / or summative).

Therefore, in accordance with the mode in which evaluation is integrated in an ongoing didactic process, we distinguish forms of evaluation that we can define as follows:

- **The initial evaluation** (assessment) is organized at the beginning of a learning cycle or study program and aims to determine the level of training of students. The initial assessment allows to determine the level of students' acquisitions in terms of knowledge, skills and abilities and aims to ensure the premises for achieving the objectives proposed for that stage.
- **The formative** (continuous) evaluation (assessment) accompanies the entire didactic path and is achieved through systematic verifications of knowledge of the study subject, the teaching of which is provided by the discipline curriculum in a certain interval / period of time for the entire student body, belonging to the same socio-academic units (same group, same torrent, same years, etc.).
- **Summative or cumulative assessment** (evaluation) is usually performed at the end of a longer training period (e.g.: chapter, module, semester, year of study, cycle of education, etc.), providing relevant information about the level of performance of students against objectives of the discipline stated in its curriculum.

Based on the arguments listed above, all evaluations are carried out in the time interval after the initial evaluation and before the final evaluation period, regardless of how these are called in the internal institutional documents, prepared by various universities, whether they are called periodic (term totally inappropriate), whether these are called current - however, these are formative or continuous!! By the way, the *formative and continuous* determinatives, in the context of didactic evaluation, are interchangeable, and the use of both of these versions is scientifically and methodologically correct.

B. Authentic didactic evaluation: between concept and applicability

Analyzing the new theoretical and methodological approaches to didactic evaluation, we encounter tangent ideas on how to carry out evaluations. Such a position accepted among researchers and teachers in the field of educational sciences has the idea of so-called authentic evaluation / assessments [2 - 8].

By www.merriam-webster.com: **AUTHENTIC** is an adjective; has given spelling and transcription: *au·then·tic* | \ *ə-* ˈ*then-tik, ȯ-* \

Definition of authentic: (1a): worthy of acceptance or belief as conforming to or based on the fact; e.g. paints an authentic picture of our society; (1b): conforming to an original so as to reproduce essential features; e.g. an authentic reproduction of a colonial farmhouse; (1c): made or done the same way as an original; e.g. authentic Mexican fare; (2): not false or imitation: REAL, ACTUAL; e.g. an authentic cockney accent; (3): true to one's own personality, spirit, or character; e.g. is sincere and authentic with no pretensions; (4a): of a church mode: ranging upward from the keynote; — compare PLAGAL sense 1; (4b): of a cadence: progressing

from the dominant chord to the tonic; — compare PLAGAL sense 2; (5): obsolete: AUTHORITATIVE.

It seems that the given term has no meaning other than something valid, and is usually defined as something related to the actual world around it.

Some researchers expressed their views on the nature of authentic evaluation. Palm (2008) notes that this term is most often applied in contexts that have a tangent to truth and/or reality [9].

Bruce B. Frey Vicki L. Schmitt Justin P. Allen (2012) analyzes the vision of Palm (2008) pointing out that "[...] authenticity is defined as assessment that is real in terms of processes and products, assessment conditions or the presented context, and true to life beyond school, curriculum and classroom practice or learning and instruction" [10].

For example, one of the key points of the strategic plan of Deakin University (Australia) states that the role of the institution is to "[...] empower learners for the jobs and skills of the future [...]" (Deakin, 2014) and, because in this way "assessment drives learning", it is necessary to implement "[...] authentic assessment practices in higher education" [11].

Thus, according to us, the **formative assessment**, being a systemic and periodic one is organized in a certain interval of time to analyze and capitalize not only the knowledge, skills, and abilities of students, but also to report the results obtained in the course quality's evaluation, of study methods, of used didactic materials, and also other didactic components of the given discipline **can and should meet the requirements of an authentic assessment (evaluation) both for methodological and scientific and ethical reasons** (if we talk about the dimensions of relationships: teacher-student; student-student; student-teacher, etc.).

Particularly, during seminar classes, come into play the oral teaching-learning-assessment methods, such as oral speeches, frontal debates, oral argumentation (e.g.: choosing a solution, etc.), exposition and / or verbal explanation, participation in the didactic conversation, conference, and / or interview, **peer review, called also alternative assessment (evaluation)** (all of these could be implemented both in the disciplines related to humanities and in the exact sciences' set of the disciplines by an oral presentation of public review, i.e. in front of fellow students), etc. Certainly, we consider, that the principles of genuine valuation should be taken into account during seminar classes.

By the opinion of Ofelia Oracion Flojo (2013) the lexical unit "authentic" involves measuring affectivity, skills and knowledge based on process and outcomes, and the lexical unit "assessment" involves measuring the knowledge competence based on outcomes [12].

In our opinion, in an authentic assessment, the student will be asked to apply the learned concept or theory on problem-solving / exemplifying real-life phenomena and / or to real conditions specific to a field of human activity. In other words, the real skills and / or performance of the learner will be implemented and, respectively, assessed. Thus, the authentic evaluation becomes an evaluation in which the student is asked to construct answers and / or to fulfill tasks that require more than the memory and / or reproduction of information and concepts.

As an idea, based on the practice of organizing and conducting evaluation activities, one of which, the TUM's version one, is described above, the number and frequency of assessment activities when students are graded by teachers, and the record of the learner's grades are made by both the parties - by the course holder and by his assistants - during the semester have the factor's effect of "[...] direct responsibility of the students [...] and outlining a fairer final grade" [13]. Certainly, these elements also transform a standard evaluation to

corresponds to the principles of an authentic assessment. Given that in monitoring the student's academic success the dynamics and persistence of the learner are counted, as these denote student's learning and systemic involvement and, conversely, the appearance of good results sporadically speaks about their random effect (student learned once and/or has copied and/or has been helped by someone, etc.). In the context of the authentic evaluation's applying, our opinion is that the objectivity of the evaluation has to take into account not only the good and less good grades obtained by the student but also his responsibility, punctuality, and correctness. Given elements are no less important than all others in the long run.

So, how do we have to respond to our own assessment rigors so as to minimize or even eliminate controversial and confusing situations related to measuring and grading students' activity in seminar classes?

Solutions for evaluation of students' activity during the seminar

Even if the university institutions prefer to carry out the initial, formative, and final evaluations in written form versus oral form, there are oral didactic activities anywise predominate both in the social & human disciplines and in the disciplines in the field of exact sciences in the seminar lessons. Although the exact disciplines focus mainly on solving exercises and problems from the scientific field to which the object of study is related, the students' oral communication competence is developed and capitalized here anyway. For example, in the seminar classes within the university disciplines such as - Fundamentals of Computer Programming, Data Structures and Algorithms, Advanced Programming Techniques, etc. - when the code writing is based on a formulated problem, it is very good to bring a few valid arguments, ask some clarification questions and insert unambiguous comments because through these we help students to implement the necessary algorithm and/or, conventionally speaking, to build that code. Similar situations often occur during laboratory lessons, guidance hours, etc. when the teacher initiates an interview with the student regarding some program sequences, etc. in order to evaluate the level of knowledge of the concepts by the student or to identify the originality of the presented and/or supported work.

Thus, in the didactic interaction teacher-student, student-student, student-teacher, the communication component is indispensable, and in the context of an authentic evaluation, this really cannot, but should not be avoided. Moreover, identical didactic situations happen many times during seminar lessons: questions are asked and answers are expected from the participants on both sides of the chair and everything, starting with an elementary answer to a question; presentation of a paper; writing a perfect (or less perfect) piece of code completely or partially, arguing the choice of a solution, using some discipline-specific notions, etc. - all these should be verbalized. Given facts are a part of the didactic process and are related to the student's activity in the lesson which, like any other effort or demonstrated educational result, can and should be observed, evaluated, and ultimately graded by the teacher.

The subject of objectivity was not touched in vain. In general, in the case of grid tests and written papers, the student's work itself is material proof able to answer several questions when these arise as a result of disproof, ambiguities related to the objectivity of the assessment, and its grading. Our question is how do we cope when there are some ambiguities in the evaluation/grading of the student's activity during the seminar class,

where not every learner necessarily gets to the blackboard or everyone equally interacts with the teacher or other course colleagues to solve problems/explanation of some solutions, etc. in the same lesson, especially as dynamics and persistence are important in authentic current assessment, just like in all seminar classes?

Or what is the purpose of the seminar lessons, these being passed as practical classes, if, as in the theory lessons, only the teacher speaks and explains? Teachers apply various strategies for organizing practical classes, but when these lessons lack lively interaction, fixed dialogue, the mental energy of the teaching process's actors gives rise to solutions here and now, mostly, the type of seminars where is done only the interrogation of homework, checking the studied subject, etc. – these kinds of classes are quite boring. So, teachers, really, try to be creative when possible. Obviously, with this objective in mind, the evaluation should be planned/executed and based on the principle of authentic evaluation: (1.) balancing the content of the evaluation activities & items to be evaluated; (2.) impartiality towards the evaluated learner, but also (3.) the transparency of the grading process. One of the characteristics of objective and authentic evaluation is its transparency.

By Cosovan O. (2017) "[...] the evaluation requires the application of criteria that are known from the beginning, from the moment of formulating the task, the evaluated learners too" [14].

In its classic version, the one that satisfies the conditions for elaborating written evaluations either of grid type or of case study type, essay, thesis, etc. are applied the analytical scales and given practice is already one unanimously accepted by the representatives of the Republic of Moldova's educational system. Therefore, according to the development methodology of the written evaluation, the author of the evaluation subjects is the person who specifies the scoring method.

We share the opinion of Cosovan O. (2017) as that "[...] the evaluation of oral communication acts is accompanied by observation grids, but also by numerous difficulties. First of all, this is a time-consuming process; [...] in the second, the topics for speeches must be varied, while maintaining the same degree of difficulty; thirdly, the debriefing of the speech, if it is not recorded, reaches moments of mistrust: the evaluated person questions the interpretation of the own speech and declares that he would not have said such a thing, etc." [ibidem].

The communication, hence and the evaluation of the didactic activity of the students in the oral form are natural and indispensable at the seminar classes for the whole range of academic disciplines (and those related to the humanities, but also those related to the exact sciences), even if the written evaluations are in the top of the preferences of the teachers, but also of the students. Moreover, the originality of the student's work and / or the depth of his arguments regarding the choice of a solution or the application of an approach in case of implementing an algorithm and, subsequently, the writing of a code sequence related to the studying of programming languages' disciplines, such as the professionalization courses from FCIM, TUM, can be detected only through an additional interview.

Just because we do not know or are confused about how to evaluate such a student activity does not mean that it should be treated superficially and / or ignored either by the absence of grading or by uniform grading of all students with the same marks, regardless of whether it happens in the same lesson or at the end of the course, when the mark should appear near of the learner's name and should reflect the degree of his involvement and success in such activities.

In our vision, the different forms of oral activity - individual speeches, interviews, group discussions, interventions that correct and / or that come with clarifications on the speech of another person (colleague and / or teacher), presentation of papers, public presentation of case studies, or research, interviews, etc. - have an added formative value from the perspective of reaching the didactic finalities by the student, and also for the group cohesion's formation; developing the ability to build collaborative communities for students (a collaboration of professional one day).

We believe that all oral forms of educational activities, and also the results of the didactic interaction should be taken into account. Respectively, these require an evaluation no less rigorous than the written tests, in particular, because the activities and didactic interaction supported by oral methods are an integral part of the contract hours provided by the curriculum of the academic discipline.

The basic criteria for evaluation of the predominantly oral activity of the student in the seminar classes are, in general, common for several categories of products resulting from the educational activity.

These include: (1.) the compliance with the task; (2.) the scientific correctness of the statement/the validity of the argument; (3.) the correctness of the language and the correct use of subject-specific terms and dictionaries; (4.) the accuracy of code writing (applicable in the learning of all possible programming courses. Another relevant criteria should be stipulated in the study of other courses); (5.) the observance of the temporary volume of the speech (it depends on the situation; it may depend on the complexity of the problem).

For the score to be offered for each criterion to be evaluated, it should be presented gradually (e.g.: through a grid, having a certain scale (either from 0-10 or from 0-5, etc.)) by means of explicit descriptors against which the student's grade can be marked according to the level of knowledge/degree of development of the competencies reflected by the criterion in question.

For example, we have at our disposal 5 criteria for evaluating the student's activity during the seminar lesson at a certain course, where the didactic subject focuses on the study of one or more programming languages and/or technology (C/C++, C#, Java, Python, etc.) or other computer science-related technologies, through which specific source code will be developed.

In order to illustrate how to provide the final scores to one or more students during this type of activity in the seminar classes, we will simulate a teaching situation, namely:

(1.) There is the problem to be solved is formulated frontally in the given lesson.

(2.) The teacher also uses oral methods, such as oral speeches, frontal debates, oral argumentation, group expertise, brainstorming, the argumentation of the proposed solutions to solve the problem / exercise, etc. for the subsequent demonstration of its solution.

The modeled didactic situation is complex also from the point of view of the educational approach, and also from the perspective of the intellectual involvement of the students.

(3.) As a solution, we could develop a more or less detailed grid that will help the evaluation, grading the student's activities, and later, if it is necessary to argue the grade by selecting / providing a score corresponding to the level of knowledge / skills developed by the evaluated one.

For example, we found very original solutions for the development of tools for evaluating spoken speech [ibidem]. Although these suggestions are formulated for the needs of courses related to the philology teachers' professionalization, some ideas can be adopted and applied to subjects other than social humanities, while other ideas can be taken almost the same way. In our view, this is a grid that evaluates the quality standards of arguing the ideas/solutions proposed by the learners.

The following grid of descriptors (see Table 1) can be implemented in seminars to academic disciplines related to the study of exact sciences after a slight adaptation of the ideas presented above:

Table 1

Descriptors for student's arguments evaluation

Ord. num.	Descriptors' content	Given score
	Evaluation of the argumentation by S	
1.	S formulates arguments in connection with the discussion; the arguments are original.	5
2.	S makes valid and logical arguments, but without originality.	4
3.	S's argument is logical but incoherent and confusing.	3
4.	S brings arguments with uncertain validity; the arguments put forward do not support the expressed point of view.	2
5.	S tries to argue, but what he proposes is not an argument for the expressed opinion (or the expressed opinion is missing).	1
6.	S makes no arguments.	0

The evaluation grid of the criteria for understanding the subject of the discussion can be implemented with a slight modification of the original solution, as follows (see Table 2):

Table 2

Descriptors For Evaluation Subject Comprehension by Student

Ord. num.	Descriptors' content	Given score
	Evaluation of the comprehension of the subject by S	
1.	S launches new and contradictory interpretations of the subject. S makes sure to concretize the topic and to bring the discussion back to the formulated topic if he feels a deviation.	5
2.	S explain the topic and return to the formula under discussion.	4
3.	S repeats what your colleague said, but did not add value to the content or depth of the idea (treads water).	3
4.	S demonstrates a unilateral understanding of the subject.	2
5.	S deviates from the subject to irrelevant things. S proves a simple understanding of the subject that is not suitable for age.	1
6.	S does not prove an understanding of the subject. The S's interventions are either missing or detached from the subject.	0

Given the fact that during this paper we try to describe the development of a methodological tool able to capitalize the didactic evaluation grids based on descriptors, which correspond to the principles of an authentic evaluation, we will exemplify its implementation through a possible live coding (LC)[2] activity. This type of activity is usually implemented in the seminar classes from the study programs within FCIM, TUM.

The product of the teaching activity intended for evaluation can be written either directly (1) on the blackboard or (2) projected on a multimedia screen or (3) broadcasted during an online lesson through an app working in videoconference mode. The set of listed methods reproduces the use of the blackboard as a frontal didactic method.

There is proposed the following evaluation tool here (see Table 3):

Table 3

Descriptors for evaluation the code's writing by student

Ord. num.	Descriptors' content	Given score
	Quality evaluation of the code's elaboration by S (Live coding commented by S)	
1.	S writes the impeccable code from the perspective of the proposed solution both syntactically and logically (semantically) in full compliance with the condition of the problem and the algorithm to be implemented. The arguments and comments in the written code are clear and absolutely correct!	10
2.	S can make slight deviations in formulation, concepts' use, argue of ideas, but self-correct (or correct your colleague) very quickly in all situations related to the code's development. S proposes alternative solutions without deviating from the given problem's formulation (if he deviates, he returns easily to the subject of the problem). S can make slight deviations in formulation, concepts' use, argue of ideas, but self-correct (or correct your colleague) very quickly in all situations related to the code's development.	9 - 8
3.	S explains the proposed solution at the code level, but does not propose any alternative solutions (either syntax or algorithm); makes some deviations from the formulated condition of the problem. If S deviates, he does not return to the subject independently. S demonstrates a one-sided understanding of the problem. S writes the code with the direct involvement of the teacher/colleagues; the code is perfected with the help of the teacher/colleagues along the way; the written code has a lot of corrections, but it is a functional one.	7 - 6

[2] Live-coding, also called on-the-fly programming, is an interactive method of presenting the process of real-time code writing, accompanied by verbal cues and explication of programming tasks. Thus, the programming process represents only an integral part of another, more complex process, in which the running of the elaborated code will follow. LC is also used as a teaching method in the study of programming languages and techniques.

Continuation Table 3

	S repeats the ideas presented by colleagues, but formulates them awkwardly, with mistakes in the use of concepts, the sequence of writing / developing the source code (even though the solution is dictated, he cannot translate it into the syntax of the used programming language).	
4.	S showed a superficial understanding of some fragments of the problem. S denotes a lack of understanding of the integrated condition of the problem. Written code by S is done with syntactic errors; although the simple as complexity code sequences are written correctly (or almost correctly).	5 - 4
5.	S deviates from the subject to irrelevant things; S demonstrates improper (aberrant) use of terms. S proves the simplistic, age-inappropriate understanding of the subject. The attempt to write code by S is done with numerous syntactic errors, even on the simple, as complexity, fragments of code.	2 - 3
6.	S does not demonstrate an understanding of the subject. The interventions are missing or detached from the subject. The written "code" is no code at all!	1
7.	S is quiet, does not say anything & writes nothing.	0

Conclusions

The idea of implementing such grids to facilitate and make transparent the assessment carried out by the teacher, using descriptors, can be extended and / or customized to assess other types of educational activities or to measure dimensions of learning and / or demonstrate observable skills, which are more difficult to remember and document (as is the case of written works).

These kinds of grids in traditional or electronic format (created with tools like Google Forms, Online Quiz Makers, etc.) can be offered to a group of students for peer evaluation in other teaching activities where collaborative methods such as organizing competitions / public presentations of learning outcomes, etc.).

We consider that documenting student activity through a descriptor evaluation grid transforms the didactic evaluation supported by oral communication methods into one that meets the principles of authentic evaluation because it comes with the correct, objective, real-time quantification of the evaluator's performance, which amplifies the evaluation value to the class, the credibility of its objectivity, offering involuntarily to the evaluated one a feedback regarding his answer (the feedback is included even in the body of the evaluation tool, in descriptors).

Although the use of such a detailed tool with criteria, indicators, and descriptors obviously requires time and effort on the part of the teacher or other evaluators, we recommend the implementation of such grids in evaluating students' activity in seminar classes, especially just in this way, according to Cosovan O. we and students can have "the certainty of an objective assessment" [ibidem].

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FEATURES OF STRATEGIC MANAGEMENT IN THE DIGITAL ECONOMY

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Abstract. The article substantiates the relevance of strategic management of organizations in the digital economy, taking into account the specifics of the industry. The development of info communication technologies is currently one of the strategic directions for modernizing the economy not only in Russia, but also in all countries of the world in the context of digital transformation. In connection with the above, the ranking of countries by the Digitalization Index in 2020 has been studied, and the leading countries / markets of the world by the number of smartphone users in 2021 are presented. To improve the strategic management of organizations in the context of digitalization of economies, the key characteristics of internal and external strategic balance are shown, a model of strategic management of organizations - telecom operators is built

Keywords: *strategy, strategic management, digitalization, digital transformation.*

Rezumat. Articolul fundamentează relevanța managementului strategic al organizațiilor în economia digitală, ținând cont de specificul industriei. Dezvoltarea tehnologiilor de informare și comunicații este în prezent una dintre direcțiile strategice pentru modernizarea economiei nu numai în Rusia, ci și în toate țările lumii în contextul transformării digitale. În legătură cu cele de mai sus, a fost studiat clasamentul țărilor după Indexul de digitalizare în 2020 și sunt prezentate țările/piețele lider ale lumii după numărul de utilizatori de smartphone în 2021. Pentru a îmbunătăți managementul strategic al organizațiilor în contextul digitalizării economiilor, sunt prezentate caracteristicile cheie ale echilibrului strategic intern și extern, se construiește un model de management strategic al organizațiilor - operatori de telecomunicații.

Cuvinte cheie: *strategie, management strategic, digitalizare, transformare digitală.*

Introduction

The current crisis of economic development has revealed the current directions of the organization's development, having determined the process of optimizing the activities of enterprises in all areas of business as a priority. In conditions of an unstable external

environment, limited resources, instability of the organization's position in the industry and in the market as a whole, it is important to ensure strategic balance based on the competent use of strategic management tools. Optimization of the organization's management through flexible regulation, timely changes that meet the challenge from the environment, allows not only to achieve competitive advantages, but also to survive, develop in the long term based on achieving a balance between the micro and macro business environment, ensuring strategic balance. At the same time, it is necessary to take into account the specifics of the industry's development, which will help to select the most effective strategic management tools. Research by foreign scientists in the field of strategic management (Ackoff R., Albert M., Ansoff I., Chandler D., David R., Drucker F., Fayol H., Kotler F., Mescon H., Khedouri F., Mintzberg H., Porter M., Thompson A., Gamble J., Strickland A. [1 - 11] and others) indicate the relevance of modern research in the field of strategic management. The study of issues of strategic planning and management in industries and spheres of business always gains high weight in the context of an unstable external environment. However, theoretical and methodological issues of ensuring the strategic balance of telecom operators require a more thorough scientific study, which made it possible to formulate the goal and objectives of the dissertation research.

Even though such representatives of the scientific community as Vertakova Y., Kryzhanovskaya O., Plotnikov V., Leontyev E. [12 - 14] and others were engaged in the issues of strategic management in the industry of information and communications of the Russian Federation, the issues of strategic optimization of the business of telecom operators to ensure strategic balance require further scientific research. elaboration.

Thus, the analysis of the strategic development of domestic and foreign telecom operators in the context of digital transformation actualizes the need for scientific research of the theory and practice of strategic planning and the search for new approaches to it, including optimization of the management of organizations - telecom operators - to ensure strategic balance.

Results and Discussion

The ongoing international studies indicate a close connection between the development of info communication technologies and the economic well-being of the state. The large-scale deployment of high-speed communication technologies and Internet access is a catalyst for the development of ICT projects, creates a multiple multiplier effect on other sectors of the national economy, contributes to the acceleration and scaling of technological progress, which ultimately ensures GDP growth in both individual regions and the country as a whole. In addition, developing countries with better telecommunications infrastructure are attracting more outsourcing companies and foreign investment.

The development of info communication technologies is currently one of the strategic directions for modernizing the economy not only in Russia, but also in all countries of the world in the context of digital transformation.

The report "Digital-enabling countries proved more resilient to the Covid-19 economic shock" presents the leading countries in the Digitalization Index in 2020. Figure 1 shows the top 10 leading countries in this index in 2020 and estimates of the main components index.

The US, Denmark and Germany once again make the top three of our 2020 Enabling Digitalization Index (based on data from end-2019). The EDI measures the ability – and agility – of countries to help digital companies thrive and traditional businesses harness the digital dividend.

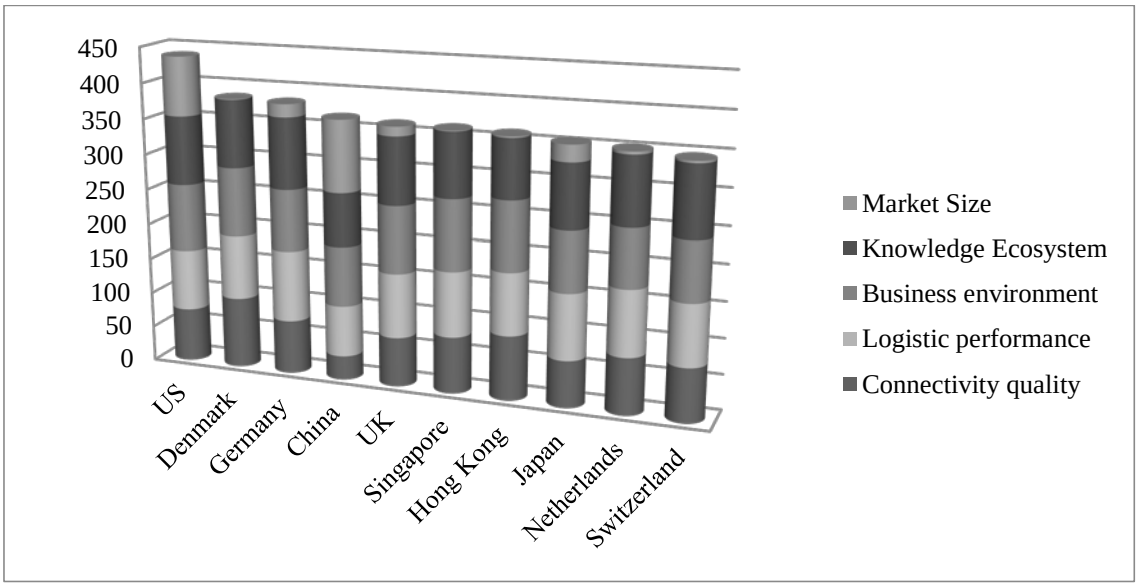

Figure 1. Top 10 Countries in EDI 2020.
Source [15].

Russia ranked 38th in the 2020 Digitalization Index ranking, losing one position compared to 2019. Figure 2 shows the estimates of the Digitalization Index components for Russia in 2020.

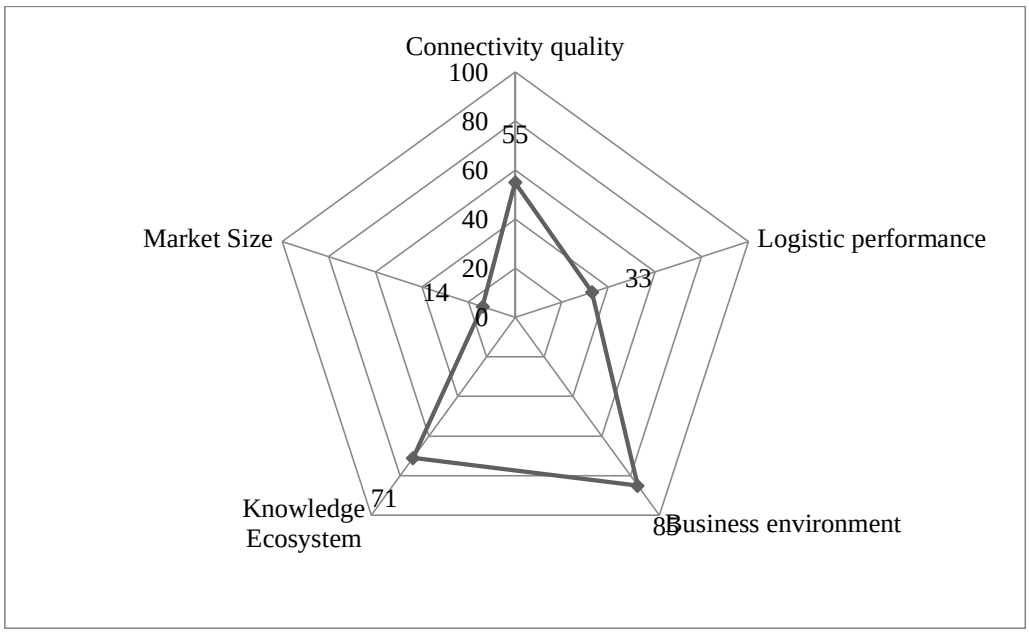

Figure 2. The estimates of the Digitalization Index components for Russia in 2020.
Source [15].

In the context of digitalization in the environment of telecom operators, the competition is especially aggravated.

The picture below shows key data points, including population, online population, smartphone users, active smartphones for the top 10 countries/ markets worldwide by number of smartphone users in 2021.

Thus, the problem of optimizing the management of an organization to ensure strategic balance (using the example of telecom operators) in the context of digitalization is becoming increasingly important.

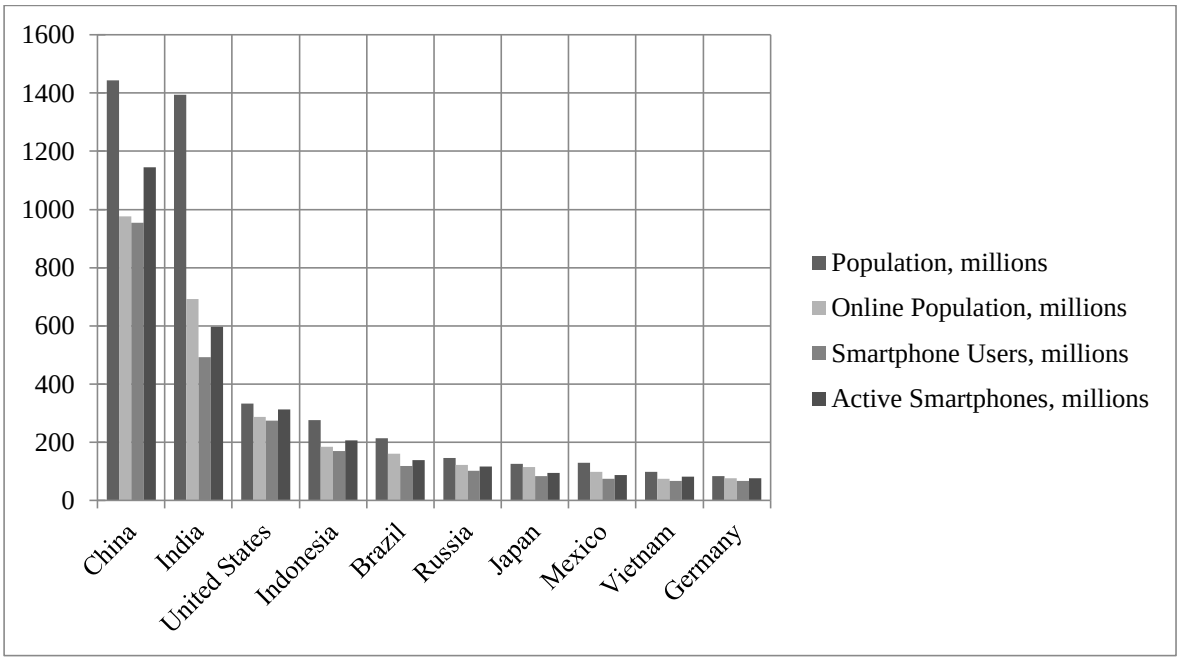

Figure 3. Key data points for the top 10 countries/ markets worldwide by number of smartphone users in 2021.

Source [16].

The picture below shows smartphone penetration for the top 10 countries/markets worldwide by number of smartphone users in 2021.

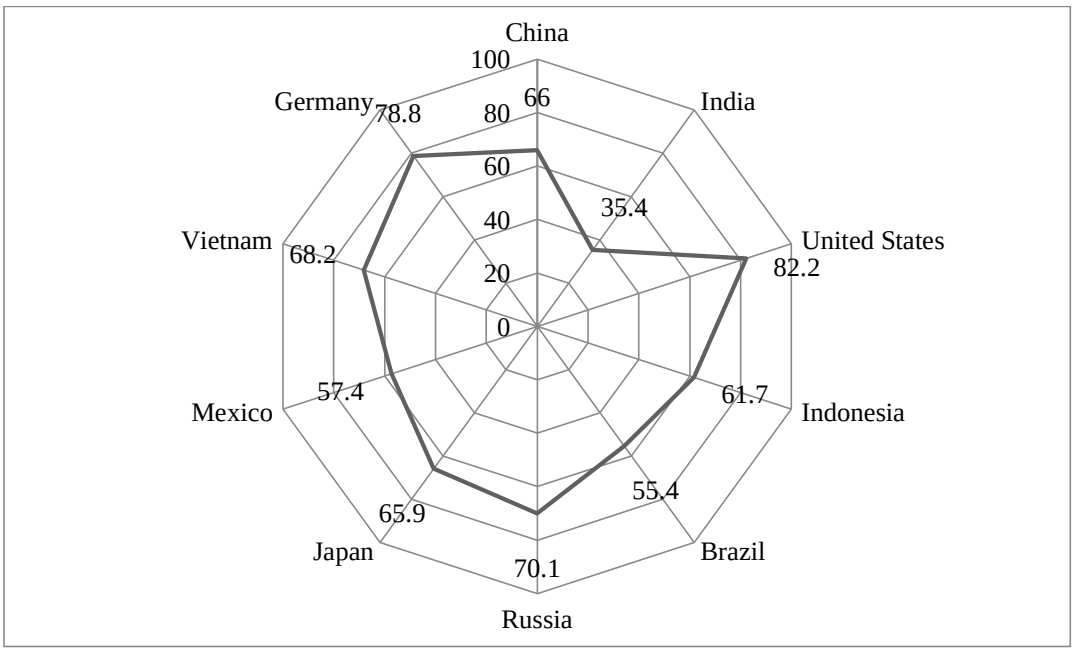

Figure 4. Smartphone penetration for the top 10 countries/ markets worldwide by number of smartphone users in 2021.

Source [16]

In an unstable external environment, organizations have to adapt, change, maneuver to ensure sustainable development, that is, to achieve balance both within the enterprise and in the external environment for a certain period of time.

Organizations are focused on development in the medium or long term, maintaining their key positions in the short term can be interpreted as functioning, "keeping afloat", which is not advisable from the point of view of doing business. That is why the problem of strategic

balance is becoming urgent.

Based on the conducted research of scientific approaches, it can be argued that there is no generally accepted definition of the strategic equilibrium of an organization. The sources consider only related concepts.

Focusing on the understanding of balance in various areas of research (economics, technology, psychology, physiology, philosophy, statistics, mathematics), we identified the meaningful characteristics of the concept of internal strategic balance of an organization, since it should be considered in two aspects:

- strategic balance as a balance of goals, tasks, functions, resources, technologies within the organization (internal strategic balance);

- strategic balance as a balance of organizational capabilities and strategic directions of development and opportunities and threats of the external environment, that is, external strategic balance in the industry, the sphere of doing business (external strategic balance).

The substantive characteristics of the external strategic equilibrium of an organization should be sought in scientifically grounded approaches and theories of general, economic, military-strategic equilibrium.

Summarizing the positions of famous scientists on the problem of finding equilibrium in the market, we understood that the concept of external strategic equilibrium is closely related to such categories as economic equilibrium, general equilibrium, military-strategic equilibrium, but it is not distinguished within the framework of strategic management.

Building a field of strategic priorities for the development of organizations can become a fairly effective methodological tool for determining the strategic directions of development of an organization based on an analysis of the legislative activities of the state, foreign policy and the state of the internal market, and the implementation of the identified directions (ways) of development not only in the business sector, in our case, in the telecommunications sector , but also each organization (strategic business unit) will allow to ensure a balance of the strengths and weaknesses of the organization and the opportunities and threats of the external environment, that is, they will provide external strategic balance in the industry, the sphere of doing business (external strategic balance).

Thus, the strategic balance of the organization is ensured by the achievement of internal and external strategic balance, the achievement of only one state can be considered as stability (either relative to other enterprises, or relative to the normative or planned values of various indicators of the internal development of the organization), the all-round effective strategic development of the organization presupposes the achievement of a bilateral balance external and internal balance.

Taking into account the different points of view of researchers regarding the process and models of strategic management of an organization in general and telecom operators in particular, we have developed an author's model of strategic management of organizations - telecom operators (Figure 6).

The process of developing and implementing the development strategy of an organization - a telecom operator - takes place, in our opinion, in three consolidated stages: a preliminary assessment of the state of the enterprise and the impact of the external environment; formulation and choice of strategy; implementation of the strategy. This allows you to simplify the process and focus on the main directions of the organization's development.

The specificity of the model at the first stage is a broader analysis of the industry, an

assessment of the strengths and weaknesses of the organization - a telecom operator - in the industry based on identifying the problems of the telecom operator, identifying solutions, as well as determining the strategic priorities of telecom operators, taking into account the specifics of the industry. Due to the constant changes in the external environment, aggravation of competition in the market, the indicated steps will contribute to obtaining complete, relevant, comprehensive information not only about the industry as a whole, but also about the telecom operator in particular.

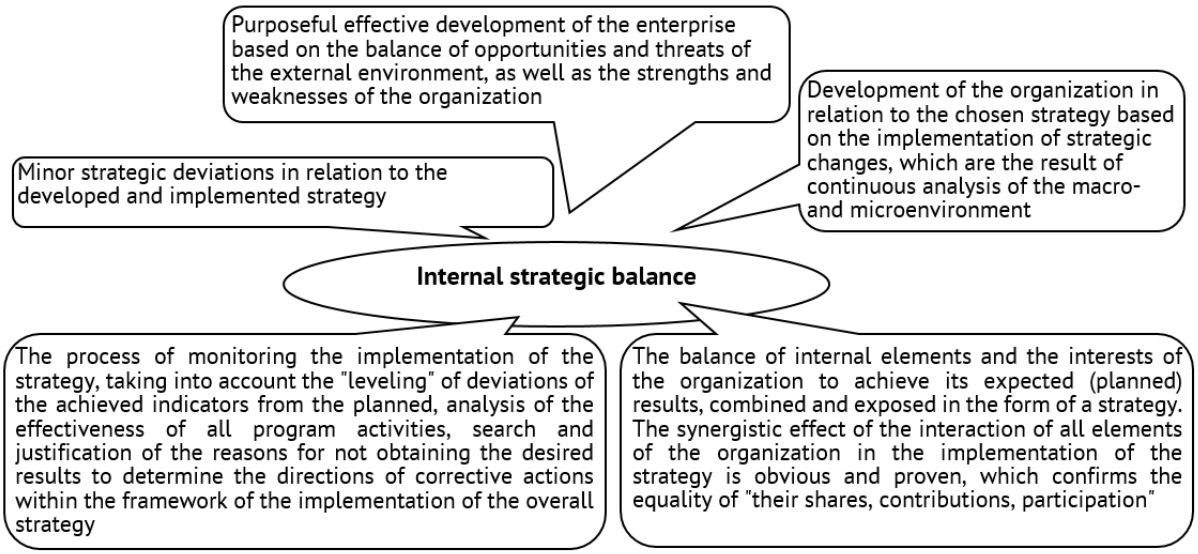

Figure 5. Substantive characteristics of the concept of internal strategic balance.
Source: compiled by the authors.

The author's addition at the second stage is the need for a better formation and selection of competitive strategies (general and specific development strategies) based on an analysis of the directions of the telecom operator's activities to ensure the strategic balance of the organization, as well as the distribution of strategies within the portfolio, the development and implementation of the priority strategic direction of the telecom operator's development within the framework of the implemented strategy.

We have identified a specific principle of strategic management - ensuring strategic balance in the organization. This stage is aimed at making the most effective choice of the organization's development strategy from the alternatives available in the portfolio, taking into account the least losses and achieving the greatest synergistic effect.

The third stage of the strategic management of organizations - telecom operators - contains the specification of the target indicators of the strategy, the development of a strategic plan, the implementation of organizational changes, the analysis of the reaction to changes, the management of changes in the activities of the telecom operator, the assessment of the results of activities with the subsequent introduction of the necessary adjustments, which provides comprehensive control over the achievement of strategic development goals of telecom operators.

The developed model of strategic management of organizations - telecom operators - has its own specifics, but at the same time can be adapted to any industry when carrying out the procedure of strategic management of the organization.

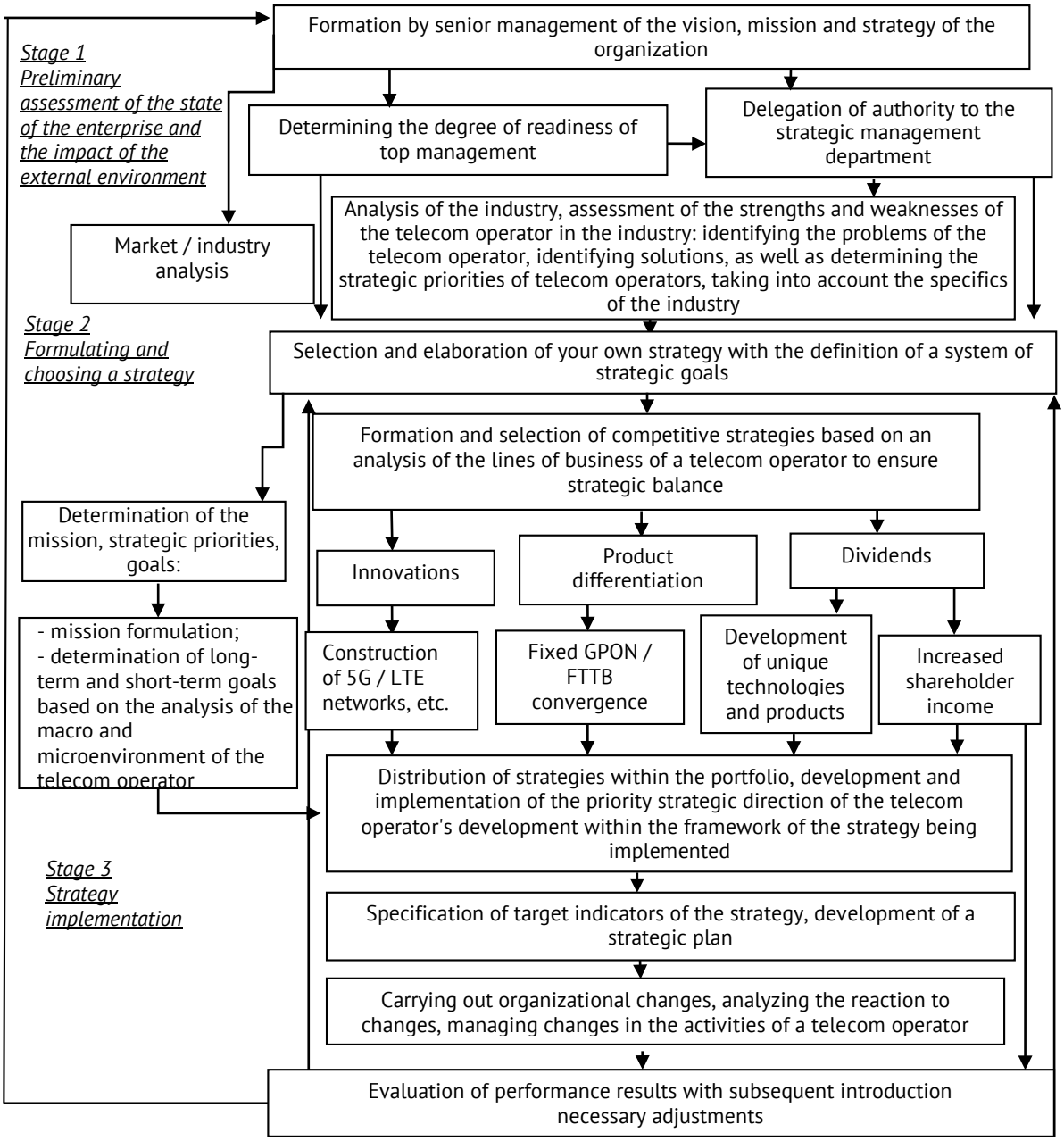

Figure 6. The author's model of strategic management of organizations - telecom operators.
Source: compiled by the authors.

Conclusions

The study substantiated the need for a scientific study of the theory and practice of strategic management of organizations in the context of the digitalization of the economy, taking into account the specifics of the industry.

As a result of the study, the problem of the development of theoretical, scientific and methodological provisions, as well as practical recommendations for the strategic management of organizations in the context of the digitalization of the economy (using the examples of organizations - telecom operators) was solved, in particular, the following scientific, methodological and practical recommendations were obtained:

- the author's definition of the concept of "strategic balance of an organization" was formulated, based on an interdisciplinary approach (economic, technical, psychological, physiological, philosophical, statistical, mathematical), which differs from existing

interpretations by highlighting two interrelated components, such as internal and external strategic balance. This makes it possible to reveal the specific features of the studied concept, which differs from such related categories as "stability", "economic equilibrium", "balance";

- the model of strategic management of organizations has been improved (on the example of telecom operators), a distinctive feature of which is to take into account the principle of strategic balance, as well as to include a block for choosing an organization's development strategy from the alternatives available in the portfolio based on minimizing losses, which will allow taking into account not only the strategic priorities of the development of organizations taking into account the specifics of the industry, but also to coordinate among themselves general and specific development strategies to ensure the strategic balance of the organization.

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COOPERATION MANAGEMENT MODEL: A CASE STUDY AT THE FACULTY OF ECONOMICS UNIVERSITAS NEGERI MEDAN

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Abstract. The purpose of this paper is to explore the collaboration that has been implemented in the curriculum as a cooperation management model to support campus performance indicators. Cooperation management uses the management functions introduced by Robbins et al., namely planning, organizing, operating, coordinating and evaluating. The case studies used in this research involve all study programs (N = 9) at the Faculty of Economics Universitas Negeri Medan, Indonesia. The data were collected using a questionnaire consisting of items focused on a differential semantic scale and qualitative responses to all items submitted at the time of the interview. This paper also reveals the dominant functions of cooperation management performed in the study program, namely: organization (8.00), planning (7.87), coordination (7.75), action (7.56), respectively evaluation (6.96). The function of the actuating and evaluation components is a severe concern for campus leaders. Flexibility and commitment to fund management support is essential for existing collaborations and plans for cooperation on strategic objectives. The implications of the study's findings - the model of industrial cooperation to strengthen collaboration between the two sides will serve for the future.

Keywords: *planning, organizing, actuating, coordinating, evaluating, study program-industry cooperation.*

Rezumat. Scopul acestei lucrări este de a explora colaborarea care a fost implementată în programul de studii ca model de management al cooperării pentru a susține indicatorii de performanță ai campusului. Managementul cooperării folosește funcțiile de management introduse de Robbins și colab., și anume planificarea, organizarea, acționarea, coordonarea și evaluarea. Studiile de caz utilizate în această cercetare implică toate programele de studiu (N=9) la Facultatea de Economie Universitas Negeri Medan, Indonezia. Datele au fost colectate folosind un chestionar format din itemi axat pe o scară semantică diferențială și răspunsuri calitative la toți itemii depusi la momentul interviului. Această lucrare relevă, de

asemenea, funcțiile dominante de management al cooperării îndeplinite în programul de studii și anume: organizare (8,00), planificare (7,87), coordonare (7,75), acționare (7,56), respectiv evaluare (6,96). Funcția componentelor de acționare și evaluare este o preocupare severă pentru liderii din campus. Flexibilitatea și angajamentul de a finanța sprijinul din partea conducerii este esential pentru colaborările și planurile existente de cooperare pe obiective strategice. Implicațiile constatărilor studiului - modelul de cooperare industrială pentru consolidarea colaborării dintre cele două părți vor servi pentru viitor.

Cuvinte cheie: *planificare, organizare, acționare, coordonare, evaluare, program de studii-cooperare industrie.*

Introduction

The presence of universities provides a domino effect that contributes to the economy and social life through university-industry cooperation on the application or transfer of knowledge and technology [1]. The increasingly competitive economic competition gives rise to new products that meet consumer needs. The product is obtained from knowledge and technology transfer from universities to industry [2]. So college is so urgent for the development of the company. However, the application of higher education products still faces many challenges, especially the sustainability and commercialization of good products in the market. This is one of the reasons for the urgency of the transformation of higher education that strengthens cooperation with industry.

Higher education in Indonesia intensely establishes strong cooperation between universities and industry. Many research and development activities have been carried out to support productivity between the two parties [3]. Education policy in Indonesia is transforming to measure universities' performance, determining the classification or ranking of universities through the key performance indicators (Indikator Kinerja Utama – IKU).

Since 2020, the IKU has been issued through a decree of the Minister of Education and Culture, which is a performance measure for universities to create adaptive and output-based universities that are more concrete. There are eight college IKU, namely: 1) alumni get good jobs; 2) students get an off-campus learning experience; 3) lecturers are active outside the campus; 4) practitioners teach on campus; 5) the work or products of lecturers are used by the community or get international recognition; 6) study programs in collaboration with world-class partners; 7) collaborative and participatory classes; and 8) international standard study programs [4]. To that achieve the target of IKU, strong cooperation with the industry and the best universities are needed. Cooperation is the main foundation to reach IKU, which in turn has an impact on university rankings.

There has been a significant transformation of higher education in Indonesia into a world-class campus. The IKU assessment leads to creating a world-class campus that tends to be oriented towards classroom learning activities centered on student and lecturer activities. A learner-centered, action-oriented learning approach, building networks among students from various campuses is an effective way to improve generations [5]. In addition, these learning activities will create an integrated interaction between the higher education curriculum and industry.

Industrial partners who will collaborate with study programs must consider the core business's suitability with the study program's needs, especially the Merdeka Belajar curriculum. So that the study program coordinators develop the Merdeka Belajar curriculum structure that is relevant to industry needs [6]. Ran et al., [7] explained several stages in

partner selection in cooperating, namely 1) collecting data and pre-processing data, 2) identify the topic of cooperation, 3) determine partner clusters, and 4) partner exploration. They further explained that partners' availability of data and patents is the primary information that determines which partners will cooperate with universities. Therefore, the study program can use these stages as a filter that will determine potential partners and mutualism by improving the performance of the study program.

Many scholars have revealed university-industry cooperation [1 - 3], [11, 12], by involving various factors or constructs that influence the cooperation. However, this paper offers something new to explore the cooperation of study programs-industry, which is more fundamental than the organizational structure of a university by involving management functions. Therefore, the purpose of this paper is to design a study program-industrial cooperation management model using the management functions developed by Robbins et al., [12] namely planning, organizing, actuating, coordinating, and evaluating.

Method

This study uses a qualitative approach by using the case study method [13]. Collecting data using a questionnaire consisting of 1) an assessment of the question items using a differential semantic scale, and 2) qualitative responses to all items that respondents will explore during interviews [10]. The interview instrument adopted Mahmudah [11] combined with the management functions proposed by Robbins et al., [12] namely planning, organizing, actuating, coordinating, and evaluating. The respondents were all heads of study programs (N=9) at the Faculty of Economics Universitas Negeri Medan, Indonesia. The data analysis technique Miles and Huberman was used through data reduction, data presentation, and concluding stages [13].

Results and Discussion

Based on the data collected, the respondent profile is obtained, which is described as follows.

Table 1

Respondent profile

Profile	N
Study program	9
Education	4
Non education	5
Gender	9
Male	6
Female	3
Education level	9
Master	6
Doctor	3

The Faculty of Economics Universitas Negeri Medan consists of nine study programs divided into two types, namely educational (N=4) and non-educational (N=5). The educational study program consists of accounting education, education of office administration, business education, and economic education. Meanwhile, non-educational study programs consist of accounting, management, economics, digital business, and entrepreneurship. The respondents (N=9) were the coordinator of the study program, which was dominated by male

(N=6), while the rest were female (N=3). Furthermore, the responses were dominated by master's education background (N=3), while the rest were doctoral (N=6). The reduced data and the presentation of the findings from the data collected in the results and discussion section are described comprehensively in the next section. Then proceed, drawing conclusions expressed in the last section.

The respondents gave an assessment (using a differential semantic scale) on a scale of 1-10 on each question item used to delve information through interviews. Therefore, the assessment of the cooperation management function that has been carried out confirms the primary data obtained from interviews. The data collected is then reduced to Table 2, which provides preliminary information that reveals the dominant management functions performed in the study program-industry cooperation.

Table 2

Data analysis related to cooperation management function

Management Function	Mean
1. Planning	7.87
1.1. Accommodate a meeting for the preparation of cooperation with the leadership.	8.44
1.2. Provide the preparation of a cooperation plan.	8.22
1.3. Performing cooperation needs analysis.	7.22
1.4. Provide the preparation of the cooperation program.	8.22
1.5. Provide the preparation of the cooperation program.	7.89
1.6. Selecting and determine in collaboration with industry.	7.89
1.7. Provide the preparation of a Memorandum of Understanding.	6.56
2. Organizing	8.00
2.1. Division of work units according to need.	8.11
2.2. Grouping of work units that describe the division of tasks.	8.33
2.3. There are details of the work to be done.	7.56
3. Actuating	7.56
3.1. Synchronizing curriculum with practitioners from industry.	7.33
3.2. Establishing standards for the implementation of cooperation with industry.	7.00
3.3. Assessment of the implementation of the cooperation program.	7.56
3.4. We are cooperating in the form of internships or field practice.	8.33
3.5. Maintain continuous communication with the industry.	7.44
3.6. Involving practitioners from industry in academic activities.	7.67
4. Coordination	7.75
4.1. Make adjustments to togetherness and balance between parties.	7.11
4.2. Prevent conflicts of interest in the implementation of cooperation..	8.22
4.3. Creating efficiency and effectiveness in cooperating.	8.56
4.4. Clarity of division of tasks between study programs-industry.	7.11
5. Evaluating	6.96
5.1. Manage internal evaluations related to the cooperation that has bee implemented.	7.00
5.2. Prepare a report on the implementation of the study program-industry cooperation.	6.44
5.3. Evaluation from faculty or the university related to the implementation of cooperation.	7.44
Actual Mean	7.63

Information obtained from Table 1 reveals that the most dominant management functions are initiated by organizing (8.00), planning (7.87), coordinating (7.75), actuating (7.56), and evaluating (6.96), respectively. In contrast, the average value is 7.63. It was further

disclosed that the management functions above the average value are organizing, planning, and coordinating, while the actuating and evaluating functions are still below the average. Furthermore, the data that has been reduced is then presented in detail on the tasks of cooperation management based on information during interviews with respondents.

1) Planning

At this early stage, the study program coordinators explained that the cooperation plan was prepared based on the need to support learning effectiveness. Cooperation programs are designed jointly by involving coordinators, faculty leaders, and industry. In conducting cooperation, it is necessary to select specific partners with the expertise of the alumni. So that alumni can be absorbed to work in the industry.

Respondent 1 & Respondent 2: a cooperation program was prepared jointly involving stakeholders from faculty and industry.

Respondent 6 & Respondent 9: the topic of cooperation must be relevant and urgent with shared needs. So it takes a team consisting of elements of the two parties to formulate the study-industry program collaboration.

Respondent 7 & Respondent 9: the selection of partners must be specific by taking into description the needs of the study program. For educational study programs, cooperation can be done with schools or educational institutions. Meanwhile, non-educational study programs can collaborate with companies or institutions that are in line with alumni expertise.

Several records from the respondents found that the planning aspect has been effective in supporting study programs-industry cooperation. This finding is also supported by the respondents' perception of the planning aspect (7.87), above the average value.

2) Organizing

This stage is the most dominant aspect in the study program-industry cooperation management function, with the highest average value (8.00) compared to other management functions.

The interview results found who had carried out the division of labor, a grouping of work units, and explanation of work details well in the study program-industry cooperation. Some of the information obtained from the respondents is described as follows.

Respondent 1: each work unit has carried out its duties according to its function.

Respondent 2: the division of tasks related to cooperation with industry has been described in detail based on the needs of the study program.

Respondent 6: there is a delegation of tasks between the leader and the coordinator.

3) Actuating

The actuating function does not work optimally in the management of the study program-industry cooperation. Who found that the average value of the actuating aspect (7.56) was below the actual average. Some of the urgent information obtained from the interview is described as follows.

Respondent 1 & Respondent 7: currently, there have been several cooperation, but the implementation of the cooperation has not been carried out.

Respondent 4 & Respondent 9: In academic activities, partners have been involved in providing lectures, e.g., public lecture programs.

Several regular activities from faculty and the university have been carried out well. However, at the study program level, the actuating of cooperation has not been optimal. It

takes commitment and financial support to realize cooperation programs in study programs that will impact campus performance.

4) Coordinating

The coordinating function in the management of study program-industry cooperation has been running effectively. The study program coordinators adapt and support the benefits received by both parties. A clear division of tasks and responsibilities has been drawn up between the two parties in planning and actuating the cooperation. Likewise, in anticipating conflicts of interest on the actuating of cooperation that has been prevented when determining partners. Some of the crucial information obtained during the interview is described as follows.

Respondent 2, Respondent 6, Respondent 9: harmonization and adjustment of the benefits of cooperation between study programs-industry carried out every year.

Respondents 1 & Respondent 7: conflicts of interest are highly avoided and presented at the determining stage.

Respondent 1 & Respondent 9: the efficiency and effectiveness of cooperation continue to be carried out due to budget constraints. Cooperation is prioritized on partners who can support the performance of study programs at a more efficient cost.

5) Evaluating

The evaluation function has not been optimally carried out. This finding is reinforced by the mean value of the evaluation function (6.96), which is the lowest value and is below the actual mean. Evaluation is closely related to the actuating function. If the actuating function is not carried out optimally, the evaluation function is not effectively implemented. Likewise, the reporting of cooperation activities, which of course, will not be able to be compiled by the study program. Some of the urgent information obtained from the respondents is described as follows.

Respondent 1, Respondent 6, Respondent 7: there is no report on implementing cooperation with industry.

Respondent 1: no evaluation of the cooperation between faculty and the university has yet been carried out.

The interview information related to the cooperation management function carried out in the study program can visually describe the management model of the study program-industry cooperation.

The findings of this research complement the research that has been done related to the management of cooperation higher education with industry. The university can apply knowledge to industry to create innovations and new technologies through university-industry collaboration [5]. Therefore, cooperation for both parties can increase effectiveness and efficiency in developing innovation for production and knowledge.

Briones et al., [8] describe the university collaboration management model's components that begin with phases, stages, inputs, and outputs. Their phase components are defined as sensitivity, diagnosis, and integration of strategies to achieve cooperative goals. A similar statement was also expressed by Ran et al., [7] that in cooperating with the industry, it is necessary to explore information on potential and inline partners to cooperate. Furthermore, cooperation fostered by both parties can stimulate motivation to conduct research and build interaction between research networks between institutions or countries [14].

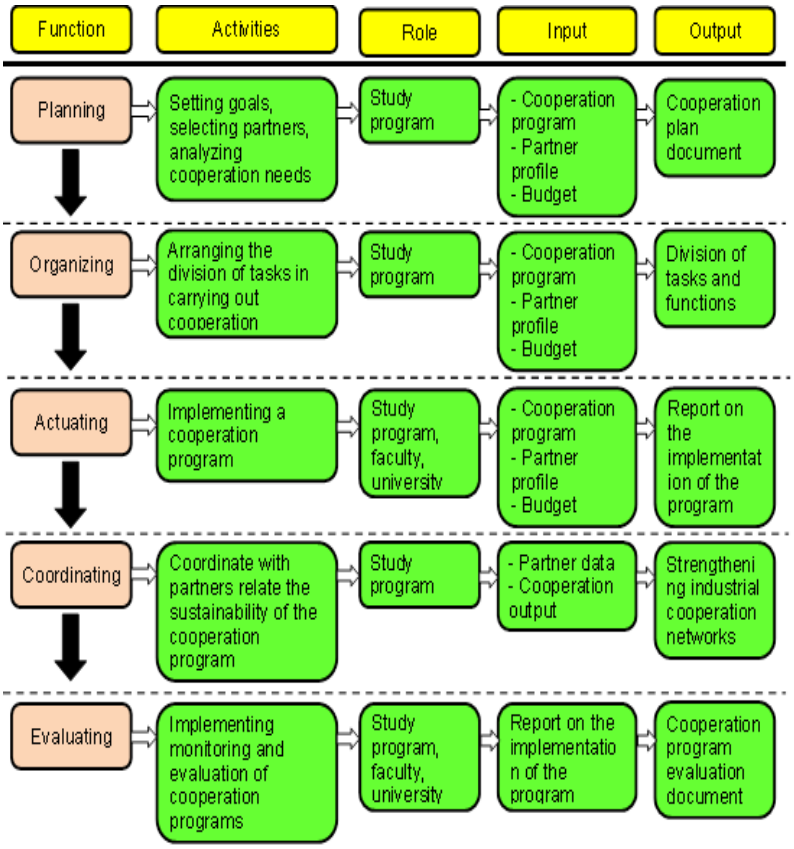

Figure 1. Management model of cooperation study programs-industry.

Early strategic steps must consider the benefits that both parties will feel. So that cooperation planning must be carefully prepared and look for suitable partners and support the achievement of the targets that have been set. The reputation of partners in the industry is a significant consideration for establishing university trust in collaborating [15]. The research findings show that the planning function performed by the study program plays an essential role in supporting the implementation of learning which in turn has an impact on the achievement of higher education IKU.

Likewise, for the organizing and coordinating functions that effectively support the management of study program-industry cooperation. The organizational structure in cooperating involves competent lecturers and staff to coordinate the division of tasks. Nevertheless, management functions in planning, organizing, and coordinating are still dominated by the role of study programs in cooperating. So the average value of these aspects is above the average.

However, in the actuating and evaluation functions, the cooperation involves stakeholders at the faculty and university levels, especially financial needs. Who found some of the information from the respondents to be a management construct for the study program-industry. First, the dependence of the study program is extreme on the faculty and university on these two aspects. Of course, this causes the study program to only carry out routine tasks without paying attention to cooperation with the industry. Furthermore, the leaders firmly commit to supporting the study program in cooperation with the industry [16]. Second, the flexibility of the study program is also needed because the topic of collaboration among study programs is very different. The flexibility of cooperation should be centered on study programs that support the university performance targets. Integrated cooperation between study programs and university as mutual support that needs each other to achieve

the best ranking. Lastly, financial support from stakeholders on campus. Currently, the university is undergoing a financial management transition period, so it is necessary to adapt financial management from all units, including study programs.

Conclusion

The management model of the study program-industry cooperation has been formed by considering the management functions, including planning, organizing, actuating, coordinating, and evaluating. Several management functions have been running effectively to support cooperation. However, the planning and evaluation aspects still require serious attention and commitment from university leaders. Cooperation is a fundamental and urgent part of keeping university ranking performance. Thus, the version of the study program becomes the main focus of supporting programs that the university has determined to achieve the best ranking. Independence, commitment, flexibility, and financial support are challenges study programs face in knitting cooperation with industry. This finding has implications for management functions that need to be maintained and improved to support university performance. Corrective actions on weak aspects can inspire other researchers to take initial steps and anticipate technological developments in the industry in developing a cooperation management model for the study programs-industry that are more adaptive to technological developments.

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FORMATION OF A PORTFOLIO OF KEY COMPETENCIES IN THE MANAGEMENT OF ECONOMIC ACTIVITIES

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Abstract. The article shows the methodological aspects of the formation of a portfolio of key competencies in the implementation of the management process. Applied calculations are carried out on the example of procurement management. The system of key competencies of the procurement management process, from our point of view, is a complex of elements interconnected and interacting to achieve sustainable competitive advantage and synergy effect, as well as highlighting the criteria for the development of key competencies of the process under study. The aim of the study is to form a portfolio of key competencies in procurement management. It was revealed that it is the key competencies, in contrast to the potential ones, that will contribute to the effective implementation of the process or the development of the organization. In this regard, it seems appropriate to highlight the factors that influence the formation of key competencies. The features of the selection of the system of key competencies from the set of potential competencies on the basis of economic and mathematical modeling are shown. The authors have developed a matrix "status risk", which is a visualization of the correlation between the status of competence and the level of its problematicity. As a result of the study, a profile of competencies was formed, which allows us to identify, in the future, two main directions of their development: 1) increasing the status of competence by increasing the level of importance; 2) reducing the level of risk due to more effective management. The proposed methodology is universal and allows the formation of key competencies of a company or process.

Key words: *key competencies, procurement, management, competency portfolio, competency profile.*

Rezumat. Articolul prezintă aspecte metodologice ale formării unui portofoliu de competențe cheie în implementarea procesului de management. Calculele aplicate sunt efectuate pe exemplul managementului achizițiilor. Sistemul de competențe cheie ale procesului de management al achizițiilor, din punctul nostru de vedere, este un complex de elemente interconectate și care interacționează pentru a obține un avantaj competitiv sustenabil și

efect de sinergie, precum și evidențierea criteriilor de dezvoltare a competențelor cheie ale procesului. Scopul studiului este de a forma un portofoliu de competențe cheie în managementul achizițiilor. S-a relevat faptul că competențele cheie, spre deosebire de cele potențiale, vor contribui la implementarea eficientă a procesului sau la dezvoltarea organizației. În acest sens, pare oportun să evidențiem factorii care influențează formarea competențelor cheie. Sunt prezentate caracteristicile selecției sistemului de competențe cheie din setul de competențe potențiale pe baza modelării economice și matematice. Autorii au dezvoltat o matrice „risc de statut", care este o vizualizare a corelației dintre statutul de competență și nivelul problematicii acesteia. În urma studiului s-a format un profil de competențe, care ne permite să identificăm, pe viitor, două direcții principale de dezvoltare a acestora: 1) creșterea statutului de competență prin creșterea nivelului de importanță; 2) reducerea nivelului de risc sau problematicitate datorită managementului mai eficient. Metodologia propusă este universală și permite formarea competențelor cheie ale unei companii sau proces.

Cuvinte cheie: *competențe cheie, achiziții, management, portofoliu de competențe, profil de competență*

Introduction

The creation of key competencies is advisable not only for organizations, but primarily for personnel, which is especially important within the framework of solving such a strategic task as public procurement management. The main goal of creating the latest competencies is to ensure the long-term competitive advantage of a process, organization or product.

In the economic literature, researchers focus more on key competencies as the main source of competitive advantages.

At the same time, the relationship between these categories is applied in various fields of activity. However, the main problem in the study of key competencies is the issue of their identification.

The complexity of this process is due to the fact that key competencies are a category that is problematic to define directly and inaccessible to direct perception. When developing tools and methods for the formation of key competencies, it is necessary to take into account the specifics of their identification. Note that since the appearance of the works of G. Hamel and K. K. Prahalad (Hamel and Prahalad, 1994) [1], there is still no universal approach to identifying the key competencies of an organization. Some economists (Albanese, 1989; Ashworth and Saxton, 1990; Bani-Hani and Al-Hawary, 2009; Spencer, 1993; Polozhentseva, Y. et al, 2019) argue that it is necessary to operationalize this process, highlight the various stages diagnostics of key competencies [2 - 6].

Economists debate the relationship between resources, organizational capabilities and core competencies (Ljungquist, 2007) [7], but there is no standard, universally accepted definition of the term (Mooney, 2007) [8].

To form a set of competencies, you can use the so-called competency libraries (vocabularies), consisting of a set of competencies, from which you should choose when developing a competency structure. Similar competencies (the job family competency system) describes a number of different roles that perform the same job. In particular, when analyzing individual competencies, this approach will provide the employee with information for career growth and promotion. Technical and leadership competencies will help shape the core competencies of an organization or process.

Materials and methods

The research is based on the generalization of theoretical material on the selected problems, analysis of factual data from open sources.

Results and discussion

Many economists have conducted research on the number of competencies in the formation of a system of key competencies. Although there is no generally accepted opinion, various authors and practitioners agree that the number of competencies in one competency profile should not exceed 12 competencies (Boyatzis, 1982) [9].

The larger number makes it difficult to use and manage the framework (profile) of key competencies. Schippmann J.S. (Schippmann, 2010) [10]. also noted that depending on the job and the organizational environment, a group of 7 to 9 generic competencies is usually required to complete a specific job. The very large number of competencies makes it difficult to assess them. However, it is widely believed that the more detailed the model, the more adequately it describes the objects and processes under study. He argued that the identification of a very large number of competencies and a detailed explanation of them leads to a situation where a large set of competencies is created. However, in his opinion, it is more important that a certain "erosion" of the importance of competencies does not occur.

Based on a strategic analysis with the participation of an expert group, we have formed a set of potential competencies for the public procurement management process.

At the next stage of the research, the formed basic system of potential competencies was broken down into separate types or levels. It is proposed to distinguish the following types of competencies:

- process core competencies are the result of a complex interaction of individual methods, technologies, tools, knowledge and skills, which provides a more efficient, in comparison with competitors, implementation of individual processes related to public procurement activities;

- systemic core competencies - unique systems that allow differentiating individual elements of the process and create additional value for consumers. At the same time, they are necessary for the development of process key competencies, since they have greater integrity,

-individual key competencies - unique knowledge, skills and abilities of individual employees of contract activities, are supportive for process and systemic key competencies, difficult to imitate and widely used (Table 1).

For the subsequent formation of a set of key competencies, a group of features of key competencies was presented and compared the potential competencies, features were developed and identified.

Signs of key competencies are also divided into three components, including: 1) external signs (Hamel-Prahalad test) - a standard assessment of key competencies; 2) additional external signs associated with the development of the macrolevel of the economic system; 3) internal signs associated with the development of internal processes, elements, etc. (Table 1).

Table 1

Basic system of potential competencies

Types of competencies		
Process core competencies	**System core competencies**	**Individual competencies**
1) flexibility of the system of interaction with suppliers 2) the ability to quickly find suppliers 3) monitoring of violations in the field of procurement and the search for tools to reduce the level of violations; 4) constant search for tools and mechanisms to improve the efficiency and effectiveness of procurement activities; 5) high level of procurement transparency, 6) competent determination of suppliers (contractors, performers); 7) targeted monitoring and audit in the field of procurement; 8) control of the customer's responsibility for the procurement results; 9) additional planning and coordination of procedures by all customers; 10) simplification of the process of standardization of purchased works, goods, services; 11) the effectiveness of the management structure, organizational communications in the field of procurement; 12) the use of the "effect of specialization" in the construction of the organizational structure of management in the field of procurement;	13) the use of modern business models of procurement management; 14) the use of electronic systems in procurement; 15) taking into account regional peculiarities when conducting procurement control; 16) focusing on financial control procedures based on the pricing mechanism;	17) the demand for personnel by organizations by competitors; 18) the ability to quickly adapt personnel to changes 19) the constancy of the staff, in particular, leading specialists 20) the level of development of managerial skills of employees of the contract service;

Source: developed by the authors.

Since individual features intersect and partially repeat each other, then for further research we will use a more abbreviated list of competency features, which do not include such features as durability, uniqueness, consistency, validity, individuality (Table 2).

Table 2

Differentiation of signs of key competencies: external and internal

Feature	Characteristic
Hamela-Prahalad test (external signs)	
Value	create additional consumer value for the consumer
Erudition	widely used and allows increasing market potential and securing market positions in the future
Differentiation	hard to copy and hard to imitate труднокопируемы и трудноимитируемы
External (additional) signs	
Durability	characterizes the degree of protection of competencies from competitors
Sustainability	the degree of stability of key competencies from the standpoint of the formation of the functional subsystem of the organization as a whole.
Complexity	competence is greater than technology or key characteristics
Uniqueness key	competencies form competitive advantages only if they are unique
Relevance	the competence meets the modern requirements of the development of society
Internal signs	
Consistency	a combination of a synergistic effect on the one hand and the impossibility of copying on the other
Synergy	taking into account the mutual influence of various factors
Temporary	the time for accumulating competence cannot be reduced
Competence affiliation	formed by different departments, but used by the entire organization
Use of competence	competence is not depreciated, but rather develops over time
Resource intensity	additional resources are required to transform core competencies into competitive advantages
Flexibility	the ability to change and adjust to the influence of the situation, conditions
Validity	based on knowledge, not coincidence
Individuality	present only within one business system

Source: developed by the authors.

At the initial stage of the study, evaluated the identified potential competencies based on comparison with the characteristics of key competencies, i.e. potential competencies that receive the highest scores can become core competencies. Table 3 shows the correspondence of potential competencies to the characteristics of key competencies. And based on the total values, the conformity assessment was carried out from 1 to 5 ("5" - 11-12 matches; "4" - 8-10 matches; "3" - 5-7 matches; "2" - 3-4 matches; " 1 "-1-2 correspondences) (Table 3).

As a result, competencies were selected that correspond to 10 or more attributes of key competencies and, accordingly, received an assessment of "4-5". At the next stage of the research, authors build a portfolio of potential competencies according to two criteria: the status of the potential competence and its problematic nature.

Diagnostics of the status of competencies was carried out on the basis of an assessment

Table 3

Compliance of potential competencies with the characteristics of key competencies

Signs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Σ
Value for the consumer		+		+		+				+	+	+	+	+	+	+				+	11
"Erudition"		+	+				+				+	+		+	+	+				+	9
Differentiation				+	+							+		+	+	+				+	7
Sustainability			+	+			+				+	+	+	+	+	+				+	10
Complexity											+	+	+	+	+	+				+	7
Relevance	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	20
Synergism						+	+					+	+	+	+	+	+	+		+	8
Temporal											+	+		+	+	+	+	+	+	+	6
Accessories			+	+			+				+	+		+	+	+				+	9
Using								+			+	+	+	+	+	+				+	8
Resource intensity	+	+			+			+						+		+				+	7
Flexibility	+	+	+											+	+	+	+	+	+	+	7
Σ	3	5	5	5	3	3	5	3	1	2	8	10	6	12	11	12	4	4	3	12	
Grade	2	3	3	3	2	2	3	2	1	1	4	4	3	5	5	5	2	2	2	5	

Source: developed by the authors.

of the importance index (I importance) of competencies, calculated on the basis of an expert assessment of the degree of influence of this competence on the implementation of the public procurement process and a compliance index reflecting the level of compliance of potential competencies with the characteristics of key competencies.

The status of the competencies is assessed according to the formula: St = Iimportance + Iconformity. This index is the status of competencies, since it characterizes the main sources of the formation of key competencies. The status shows the "strongest" competencies in key business processes in the implementation of the public procurement process. The assessment is carried out in tabular form by an expert on a five-point scale (Table 4).

Table 4

Formation of a portfolio of potential competencies in the public procurement management process

Compe -tence	Potential competencies	I importance	I compliance	St	Status level
1.	flexibility of the system of interaction with suppliers	1	3/12	1,25	low
2.	the ability to quickly find suppliers	1	5/12	1,42	low
3.	monitoring of violations in the field of procurement and the search for tools to reduce the level of violations	3	5/12	3,42	average
4.	constant search for tools and mechanisms to improve the efficiency and effectiveness of procurement activities	3	5/12	3,42	average

Continuation Table 4

5.	high level of procurement transparency	3	3/12	3,25	average
6.	competent determination of suppliers (contractors, performers)	1	3/12	1,25	low
7.	targeted monitoring and audit in the field of procurement	3	5/12	3,42	average
8.	control of the customer's responsibility for the procurement results	1	3/12	1,25	low
9.	additional planning and coordination of procedures by all customers	1	1/12	1,08	low
10.	simplification of the process of standardization of purchased works, goods, services	1	2/12	1,17	low
11.	the effectiveness of the management structure, organizational communications in the field of procurement	5	8/12	5,67	high
12.	the use of the "effect of specialization" in the construction of the organizational structure of management in the field of procurement	5	10/12	5,83	high
13.	the use of modern business models of procurement management	5	6/12	5,5	high
14.	the use of electronic systems in procurement	3	12/12	4	average
15.	taking into account regional peculiarities when conducting procurement control	3	11/12	3,92	average
16.	focusing on financial control procedures based on the pricing mechanism	5	12/12	6	high
17.	the demand for personnel by organizations by competitors	1	4/12	1,33	low
18.	the ability to quickly adapt personnel to changes	1	4/12	1,33	low
19.	the constancy of the staff, in particular, leading specialists	1	3/12	1,25	low
20.	the level of development of managerial skills of employees of the contract service	5	12/12	6	high

* I the importance of competence for the implementation of the goal of comprehensive improvement of the public procurement process, "5" high, 3-medium, 1-low

I conformity-conformity of competence to a system of attributes. *Source: developed by the authors.*

When analyzing the risk index (problematicity), one should take into account not only the number of possible problems that arise during the implementation of a certain key competence, but also the impact on the result of the process.

At the next stage of the study, a “status-risk” matrix was constructed also for all competencies. This matrix (Table 5) is a visualization of the correlation between the status of competence and the level of its problematicity (risk).

Table 5

Status-risk matrix

	Risk (problematic)		
Status	**c high**	**b average**	**a low**
A high	13	11	12, 16, 20
B average	5	7	3, 4, 14, 15
C low	1, 8, 18	2, 9, 10, 17, 19	6

Key competencies based on the “status-risk” matrix include those that show a combination of a high level of status and a low level of risk (quadrants AA, AB, BA). You should also pay attention to the potential competencies of the CA quadrant (Table 6), for which a high status is combined with a high level of problematicity (Table 6).

Table 6

The system of key competencies in the public procurement process

No	Competence	Quadrant number
3.	monitoring of violations in the field of procurement and the search for tools to reduce the level of violations	Ba
4.	constant search for tools and mechanisms to improve the efficiency and effectiveness of procurement activities	Ba
11.	the effectiveness of the management structure, organizational communications in the field of procurement	Aв
12.	the use of the "effect of specialization" in the construction of the organizational structure of management in the field of procurement	Aa
14.	the use of electronic systems in procurement	Ba
15.	taking into account regional peculiarities when conducting procurement control	Ba
16.	focusing on financial control procedures based on the pricing mechanism	Aa
20.	the level of development of managerial skills of employees of the contract service	Aa
13.	use of modern business models of procurement management (competence is questionable)	Ac

Source: developed by the authors.

Thus, on the basis of the “status risk” matrix and identifying the correspondence of potential competencies to the characteristics of key competencies, authors have formed a system (set) of key competencies for the procurement process with the participation of the state.

This characteristic of key competencies allows you to form a profile of competencies and highlight, in the future, two main areas of their development: 1) increasing the status of competence by increasing the level of importance and exploring additional opportunities for using one or another key competence; 2) reducing the level of risk or problematicity due to more efficient management (Table 7).

Table 7 presents in the profiles of the key competencies of the public procurement process. According to the results of the study, almost all competencies (with the exception of 13) can be attributed to key competencies. Competence “using modern business models of procurement management” was excluded due to the low profile score.

Table 7

Profiles of key competencies in the public procurement process

№	Competence	Number quadrant	Assessment of compete-ncies	Status	Risk (problema-tic)	Asse-ssment of the profile
3.	monitoring of violations in the field of procurement and the search for tools to reduce the level of violations	Ba	3	3,42	-1	**5,42**
4.	constant search for tools and mechanisms to improve the efficiency and effectiveness of procurement activities	Ba	3	3,42	-1	**5,42**
11.	the effectiveness of the management structure, organizational communications in the field of procurement	Aa	4	5,83	-3	**6,83**
12.	the use of the "effect of specialization" in the construction of the organizational structure of management in the field of procurement	Aв	4	5,67	-1	**8,67**
14.	the use of electronic systems in procurement	Ba	5	4	-1	**8**
15.	taking into account regional peculiarities when conducting procurement control	Ba	5	3,92	-1	**7,92**
16.	focusing on financial control procedures based on the pricing mechanism	Aa	5	6	-1	**10**

Continuation Table 7

20.	the level of development of managerial skills of employees of the contract service	Aa	5	6	-1	**10**
13.	the use of modern business models of procurement management	Ac	3	5,5	-5	**3,5**

Source: developed by the authors.

Based on the results obtained, competency maps were built for three types: systemic key competencies, process key competencies and individual key competencies.

In the process of developing a portfolio of key competencies in the public procurement process, authors identified the tasks of forming key competencies, i.e. it is shown that the identification of key competencies will support the process, improve and provide a resource component. As a final element of the research, a portfolio of key competencies was developed, reflecting both the functionality and directions of key competencies, and assessment of the profile (Table 8). Building this portfolio of key competencies in the implementation and management of the public procurement process will make it possible to make effective management decisions within the framework of strategic management.

Table 8

Portfolio of key competencies in the public procurement management process

№	Competence	Functional	Formation tasks	Profile rating
3.	monitoring of violations in the field of procurement and the search for tools to reduce the level of violations	process	support	**5,42**
4.	constant search for tools and mechanisms to improve the efficiency and effectiveness of procurement activities	process	support	**5,42**
11.	the effectiveness of the management structure, organizational communications in the field of procurement	process	support	**6,83**
12.	the use of the "effect of specialization" in the construction of the organizational structure of management in the field of procurement	process	support	**8,67**
14.	the use of electronic systems in procurement	systemic	improvement	**8**
15.	taking into account regional peculiarities when conducting procurement control	systemic	improvement	**7,92**

Continuation Table 8

16.	focusing on financial control procedures based on the pricing mechanism	systemic	improvement	**10**
20.	the level of development of managerial skills of employees of the contract service	individual	using	**10**

Source: developed by the authors.

The structure and portfolio of key competencies represent a complex interconnection of techniques, tools, skills, technologies within the framework of various functionalities (process, individual, system). Therefore, it is inappropriate to talk about one key competence when describing public procurement processes. It is necessary to consider a holistic system that includes various elements. Such an approach will create conditions for the formation of a synergistic effect and harmonization of individual elements of a set of key competencies.

Conclusion

Note that it is the key competencies, in contrast to the potential ones, that will contribute to the effective implementation of the process or the development of the organization. In this regard, it seems appropriate to highlight the factors that influence the formation of key competencies.

Thus, the analysis of the tool base for the formation of key competencies made it possible to identify the relative limitations of its application and to form its own approach with approbation on the implementation of the procurement management process. The developed author's methodology for identifying key competencies in managing the procurement process will allow not only to regulate the process in the current period, but also to implement the functions of proactive management by expanding key competencies.

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PERSPECTIVES OF THE TRANSITION TO THE DIGITAL ECONOMY IN EU

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Abstract. The Fourth Industrial Revolution or Industry 4.0 refers, in simple terms, to the way in which the technologies like artificial intelligence, autonomous vehicles, augmented reality and the internet of things are merging with the physical life of the people all around the globe. This new "era" is expected to transform in a revolutionary way the economies, employment and even the society in which we live today. The digital economy is very different in comparison to the traditional one and it is the result of the accelerated evolution of telecommunications, internet and electronics, and their integration in our everyday life. This arising economy is favoring the development of a new type of business, i.e. e-business. The process of the transformation of the actual economy in a digital one needs a set of favorable factors and a period of time, named period of transition. In this context, it is necessary to understand and to assess how advanced the transition process is in each EU country so that to be able to create and implement the suitable strategies who will lead to the digital economy. At EU level it was create an index - Digital Economy and Society Index (DESI) – with the aim to measure the progress of EU countries towards a digital economy and society. Our paper presents this index and make a comparative analysis of its evolution during the last 5 years. The results show an intense preoccupation of all EU countries for the improvement of the sectors considered in the calculation of DESI and the progress made by some states in this field.

Keywords: *business environment, digital economy, Digital Economy and Society Index, digital skills, Industry 4.0.*

Rezumat. În termeni simpli, a patra revoluție industrială sau Industria 4.0. se referă la modul în care tehnologiile ca inteligența artificială, vehicule autonome, realitatea augmentată și internetul lucrurilor pătrund în viața oamenilor de pe tot globul. Se așteaptă ca această eră nouă să transforme într-un mod revoluționar economiile, locurile de muncă și chiar societatea în care trăim astăzi. Economia digitală este foarte diferită în comparație cu cea tradițională, fiind rezultatul evoluției accelerate a telecomunicațiilor, internetului și a electronicii, respectiv a integrării lor în viața noastră de zi cu zi. Această economie în dezvoltare favorizează noi tipuri de afaceri, cum ar fi afacerile electronice. Procesul de transformare a

economiei actuale într-una digitală necesită existența unor factori suport și a unei perioade de timp, numită perioada de tranziție. În acest context este necesar să înțelegem și să evaluăm cât de avansat este procesul de tranziție în fiecare din economiile statelor UE pentru a crea și implementa strategii potrivite care să conducă la o economie digitală. La nivelul Uniunii Europene a fost creat un indice – Indicele Economiei și Societății Digitale – cu scopul de a măsura progresul țărilor UE către o economie și societate digitală. Lucrarea noastră prezintă acest indice și realizează o analiză comparativă a evoluției acestuia în ultimii 5 ani. Rezultatul arată o preocupare intensă a tuturor statelor membre ale UE pentru îmbunătățirea rezultatelor dimensiunilor luate în considerare la calcularea indicelui, precum și progresul realizat de unele state în acest domeniu.

Cuvinte cheie: *mediu de afaceri, economie digitală, Indicele Economiei și Societății Digitale, competențe digitale, Industrie 4.0.*

Introduction

We are witnesses of a radical transformation of our society with an incredible speed, which change the face of almost everything: industry and technology, economy, society, the way of thinking and making decisions. The world we live in has evolved so much over time that we can say that it has been reinvented. It's amazing how people have learned on their own how to use the resources around them to create something new and grow permanently. One invention led to another and in this way, gradually, we came to be able to achieve almost anything we imagine. The technological revolutions have created the necessary context on which the development of the digital age is based. Although each new technology seems to reach the peak of possible development, each time, a better technology appears. This unstoppable evolution has led to the creation of intelligent, autonomous systems. The economic field is deeply influenced by the digital age, in the sense that, although it began to modernize through the development of production technologies, it came to create a new way of carrying out the production activity through smart factories, improved and expanded the service sector, formulated new business models, brought profitability, added a new market, the one specific to e-commerce, etc. The performance of the digital economy is largely due to the Internet and databases. In this context the assessment of the progress of the digital economy becomes a necessity, due to its valuable information for the future decisions.

1. Industry 4.0 – the Forth Industrial Revolution

The concept of the Fourth Industrial Revolution, also called Industry 4.0, was first defined and explained in the book “The Fourth Industrial Revolution” in 2016, by the founder of the World Economic Forum - Klaus Schwab. He best described the phenomenon of the new revolution: of the many diverse and fascinating challenges we face today, the most intense and important is how to understand and apply the new technological revolution, which involves a transformation of humanity. We are at the beginning of a revolution that fundamentally changes the way we live, work and relate to each other. Schwab has provided unlimited possibilities to have billions of people connected via mobile devices, giving rise to unprecedented processing power, storage capacity and access to knowledge. He also named the confluence of several major and startling emerging technological discoveries, covering large-scale fields such as artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3D printing, nanotechnology, biotechnology materials science, energy storage and quantum computing [1]. The main features of Industry 4.0 include:

- horizontal integration - through value networks to facilitate collaboration between corporations;
- vertical integration - of hierarchical subsystems inside a factory to create a flexible and reconfigurable manufacturing system;
- integration of end-to-end engineering - throughout the value chain to support product customization.

Although it is a dynamic and on-going process, there were identified and defined the supporting pillars of Industry 4.0 (Table 1).

Table 1

The nine pillars of Industry 4.0. concept

The pillar	Description
Big Data	Represents big volumes of data used for systematic real-time optimization of processes, identification of production trends, models and relationships between inputs and outputs that can be used to improve work platforms.
Augmented Reality	Product presentation without the need for the physical product, real-time transmission of use instruction or repair instructions for products.
Simulation	Have the role of creating a mirror image of the real conditions that can be used for optimization.
Internet of Things	Involves the interconnection of all machines or devices that enter into a process, even more than that, of the entire operating system, in order to transmit and receive information or commands.
Cloud Computing	Uses a network of servers to store, manage and process the data.
Cyber security	Ensuring full protection over the most important company data: manufacturing processes, financial data, suppliers, prices or other information related to customers.
System integration	Involves the linking of computer systems allowing effective communication and data transmission between them so that there is coordination between individual systems and work programs.
3D Technology	Can be used to make prototypes and simple components in high-tech industries. The products result from the deposition of successive layers of plastic or metal.
Autonomous Systems	They will act without human intervention, being programmed and trained in this sense. Robots as autonomous systems will be able to think and make decisions independently.

Source: own elaboration with information from [2, 3].

This dramatical change of production processes, economy and whole society brings both benefits and challenges for actual and futures generation.

2. Digital economy – a goal to be reached

Digitization and digital economy are buzz words not only in media environment, but also in the scientific researches, official reports and statistics. The era of digitization started in 90s with the penetration and diffusion of internet in all areas of activities and continuing with other tools and techniques available today on the market for business sector, administration and, generally speaking, for the whole society. Being an emerging concept, with a rapid and multidimensional evolution, there isn't a single definition for the digital economy, the scientific literature providing several. In a broad sense, the digital economy means the use of "Internet Protocol-enabled communications and networks irrespective of industry" [4]. The digital economy differs from internet economy, the last one being included in the first: the internet economy refers to the different economic activities developed with the use of internet, while digital economy needs an extended interconnectivity of networks and an interoperability of digital platforms of all sectors of economy and society. The development of digital economy leaded to a continuously change of patterns of production and consumption, of distribution, promotion and communication between the actors in the business environment and/or in the whole society. The digital economy requires information expressed in a digital manner, but also a shift of way of thinking and labour culture, as well. The conversion of the information to a digital form is called digitization and the process doesn't change the content or the value of the information, only transforms it in a digital document, for an easier access and use with digital tools. More complicate is to change the manner of thinking, the business models or to add new values to the products and services through the digital chain. This approach is called digitalization and refers to the process of using digital technologies to change your business model and to adopt new ones which give more opportunities improving or re-inventing the business and passing into a new era – the era of digital business.

The development rate of digital economy is really impressive, it is estimated a double-digit annual growth around the world, not only in the North (in the area of developed countries), but especially in the South, according to the World Economic Forum [5]. The countries have different levels of development of digital economy, but the common trends are the interconnectivity of networks, which enables the information traffic to travel across and between networks and the interoperability of operating platforms, which allow the traffic to run effectively across different types of networks. One of the core problems in the field of digital economy is the identification and characterization of the core factors which are influencing the process. The assessment framework is holistic and integrates all levels of digital value chain and the stakeholders involved. The development of the digital economy must take into consideration the following interconnected areas [6]:

a) Physical infrastructure and internet connectivity – this factor deals with the quality of the physical infrastructure for the internet and other devices, with the internet penetration for persons and for businesses and with internet affordability. Despite that the physical infrastructure has improved continuously, there are huge differences between regions, countries and persons; from geographical point of view, the biggest concentrations of users involved in digital economy are in North America and China.
b) Skills and education – refer to the quality of education systems and their capacity to provide knowledge and specific, non-routine skills for the young generation and innovation capacity. In this context, the skills in math and sciences are considered

fundamentals. Here we can talk about the consumers readiness for digital economy, both for individuals and business consumers and about the digital literacy.

c) Business environment – should be analysed from two perspectives: on one hand, the business environment is the result of the development of the digital economy, reflected in how easy can start a business in the new digital conditions and which are the new business models; on the other hand, the business environment of the digital economy influences offers new opportunities to initiate and manage new business and, in the same time, the companies which are not involved in the digitalization process, are stimulated by the business environment to do it.

d) Access to capital financing and financial infrastructure – taking into account the importance of financing support for all types of development, in the case of digital economy, the financial aspects cover a broad area; in this pillar is included the digitalization of the banks and bank services for the companies, for a better connectivity with the other businesses, but also the access to the capital for the companies interested to invest in their future digital economy. With a secondary importance, it is also included the access of private persons to bank capital for acquisition of products and/or services for their personal use, but connected with digital skills or facilities.

e) Regulatory and legal environment – the development of digital economy has some specific features which must regulated properly. The lawmaking bodies must be effective and keep up with changes. Especially in the field of trade (exports and imports) are needed new procedures for the new type of assets, subjected to be traded.

From the characterization of the areas which support and influence the development of digital economy we can conclude that the there is a strong interdependence between which should be studied and assessed for a better coordination and implementation od strategies in the future. The digital economy represents now a target for almost all the world economies due to the huge positive impact on business environment and society: only in 15 years, between 2005 and 2018, the Global ICT services exports grew from $174 billion to $ 568 billion and the employment in ICT sector had an evolution from 34 to 39 million persons [7].

The level of development is uneven; however, all countries are aware that the evolution to a digital economy will affect direct and indirect all the economic and social areas and that there is a lack of methods for measure the impact and value created in the digital economy. There are some statistics and figures about the extent of the sector, but not enough to represent an accurate image of the evolution of the digital economy during last 10 – 15 years and to be the basis for future forecasting, policies and strategies creation.

For example, in the Digital Economy Report, released by the United Nation in 2019, there are information about global ICT services exports, global employment in the ICT sector, value added in ICT sector as share of GDP, share of ICT goods trade in total merchandise trade and some other few indicators for which exist information at national and global level.

There is a need to develop methods and tools to measure the digital economy with its multiple dimensions, for a better assessment at local, national and international performance.

3. Case study: the assessment of the progress towards a Digital Economy in EU

At the level of EU there is a high interest in adopting digital economy and there is a set of political and economic measures which support both the business and administrative fields. Also, it was created a composite index – Digital Economy and Society Index (DESI) – to measure the progress of EU countries towards a digital economy and society. DESI combines more than 30 indicators and uses a weighting system to rank each country according to its digital performance. The index is divided into five main dimensions, which are further composed of sub-dimensions.

Fast and reliable broadband internet access (including fixed and mobile connections) is defined as a modern and robust digital infrastructure that provides the necessary coverage for these services. Therefore, connectivity measures the implementation of broadband infrastructure and its quality.

Human capital consists of people's digital skills that are the backbone of the digital society. This type of skills is needed in order to take advantage of the opportunities offered by a digital society and allow people to use digital services and engage in basic online activities. Basic and advanced digital skills need to be implemented in school curricula and academic offerings in EU countries.

The third dimension is named: The use of internet by citizens refers to the variety of activities carried out by citizens online. The use of the Internet by people has been increasing since its inception, by expanding the possibilities of the population to access the Internet and by developing networks and internet needs.

The integration of digital technology in enterprises refers to the digitalization of business and the development of the online sales channel, these being techniques adopted by more and more companies today. One of the obstacles is the inability of small and medium-sized enterprises is to move to digitalization, which is caused by low levels of digital literacy among owners, managers and employees. The diminish of these deficiencies will be vital in order to ensure the recovery of existing gaps, so that their development in the digital age becomes possible.

Digital public services: on the public services side, digitalization is gaining power, with a particular focus on e-government.

Some of these dimensions, sub-dimensions and some individual indicators are more relevant than others, that is why they have been given a higher or lower weight in calculating the final score of the index for each country. Connectivity and human capital are considered the most relevant dimensions that reflect the priorities of EU digital policy, as they represent the infrastructure of the digital economy and society. Therefore, they were assigned with the highest percentage of 25%. The integration of digital technology captures the use of ICT by the business sector, being one of the most important growth factors and having a medium share of 20%. Finally, the use of the Internet by citizens and digital public services are possible due to infrastructure, and their contribution is enhanced by the quality of such infrastructure. For this reason, they have a lower share of 15%.

The DESI scored for country is calculated using the formula:

$$\mathbf{DESI = Connectivity \times 0.25 + Human\ capital \times 0.25 + Use\ of\ internet \times 0.15 + Integration\ of\ digital\ technology \times 0.20 + Digital\ public\ services \times 0.15} \quad (1)$$

All the sub-dimensions values are normalized to be between 0 and 100, where 100 is the best performance.

The value of EU's DESI index is given by the value average of the Member States, each state's value being formed by summing the 5 dimensions of the index, resulting in the level of digital performance of each country compared to the EU average. In 2019, the situation of the DESI index for the 28 EU Member States is presented in Figure 1.

The figure below shows that Finland, Sweden and Denmark are countries with outstanding results in terms of overall digital performance. Of course, this is partly due to their very good level of general development as a state, ranking first in many reports. Therefore, they can afford to invest more than other countries in the area of digital systems and technologies.

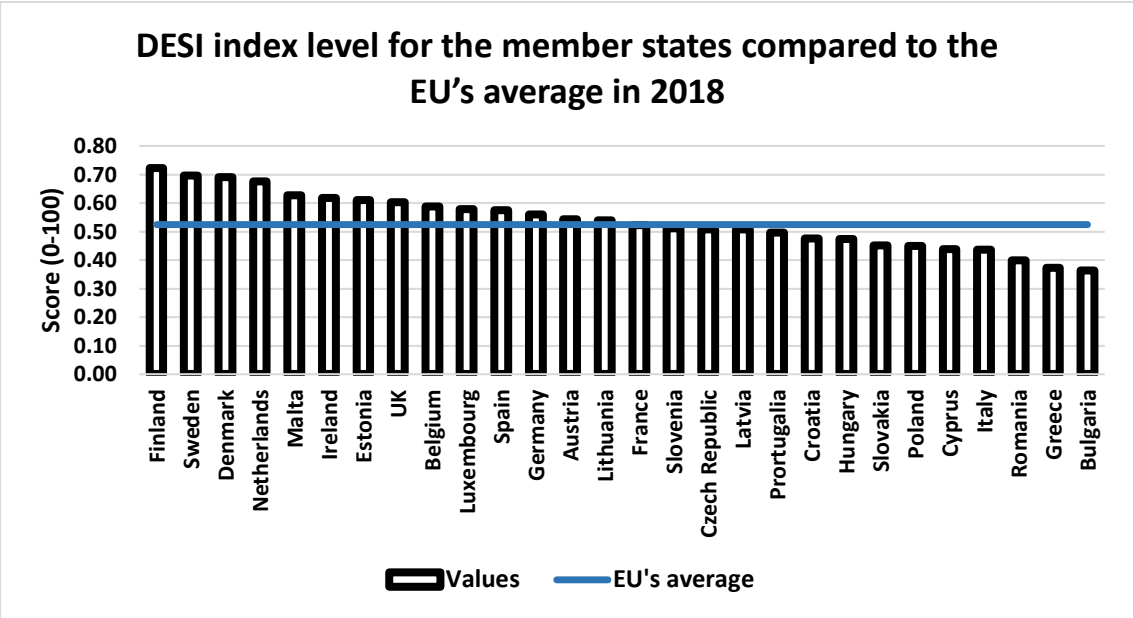

Figure 1. DESI index level for the member states compared to the EU's average in 2019.

Source: own elaboration with information from [8].

Performance's values are in the general range of 0 to 100 from the maximum value of 72.30 to the minimum of 36.43. As an average value of the 28 states, the EU reached the level of 52.57, in 2019, being equal to that of France. Lithuania, Austria and Germany are the countries with very close values, but slightly higher than the EU average. They also have a good level of development but haven't developed yet enough digitization's dimensions to be at the top. Slovenia, the Czech Republic, Latvia and Portugal are below the EU average very close to it, and they are also less developed countries than those presented previously. At the bottom of the ranking are Romania, Greece and Bulgaria, developing countries, show a slower integration of digitalization in their economic and social systems. However, this situation, built on the data collected from 2019, can change at any time, the forecasts of specialists claiming that a continuous increase of digital performances for all states is expected.

The latest DESI Report, published by the European Commission in 2020, provides data to analyze the evolution of the EU's global DESI index, on the 5 dimensions of the index, over the last 5 years. Figure 2 presents this evolution.

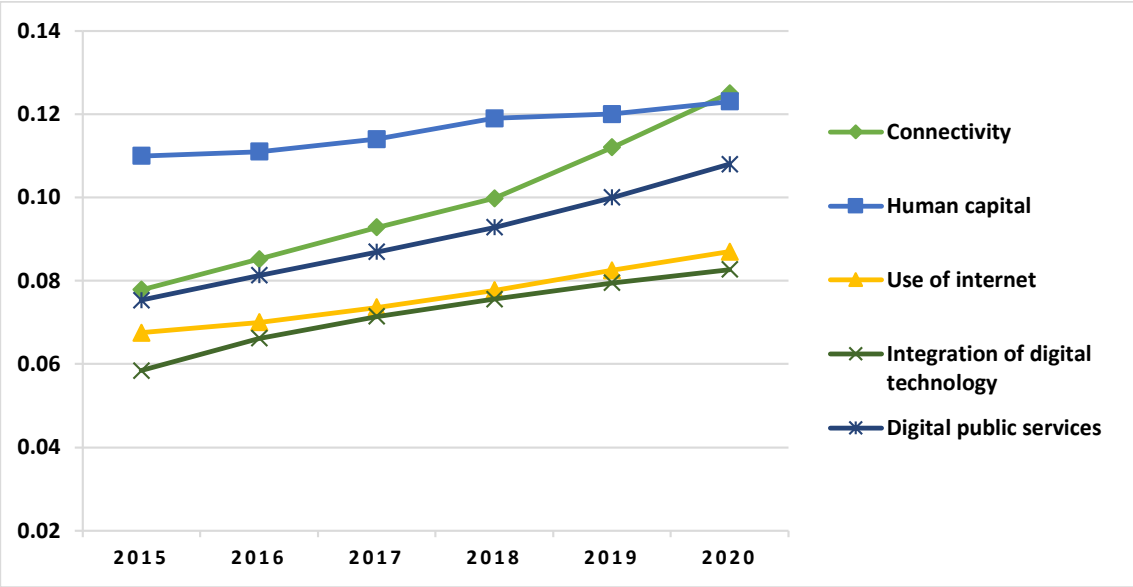

Figure 2. Evolution of DESI global index dimensions at the EU's level in 2015-2020 period.

Source: own elaboration with information from [8].

We can see from the graph the continuous development of EU's dimensions from the fact that there is no situation in which a value would fall below the previous year's value. Human capital is the dimension that started in 2015 with the best value and had a process of slight growth, and then, a stability period starting with 2018. Connectivity recorded an accelerated growth from the beginning, starting from a value of 7.78 and reaching 12.5, the highest value of all the dimensions of the DESI index. This growth became almost abrupt with 2018, which seems to have had a major impact on both dimensions. The performance of digital public services has increased steadily over the years, starting near connectivity but not having the same change of slope in 2018. The use of Internet and the integration of digital technology in businesses are the last two dimensions, close together, showing a slight and almost parallel ascent. They are at a great distance, around 5 units, from the size of human capital every year, but they are still growing, so these are the sectors that need improvement.

Conclusions

The digitalization of the economy is expanding more and more and is considered very important today for the internal economic and social development of each state. The EU faces a strong competition with USA and China and needs more investments in infrastructure for digital economy and in education systems to assure the digital literacy of future employees. The actual situation shows a good start and a good evolution for connectivity and human capital dimensions form DESI structure and a lower evolution for the other three dimensions. The forecasts are positive, according to the concept promoted by the United Nations that in the future, digital economy must be for the many, not just for the few; the individuals and small business will contribute to the rapid growth and profitability, but, in the same time, the business environment should remain open to the changes in the business models, adapted to the new reality specific to digital economy.

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CHALLENGES AND SOLUTIONS REGARDING THE QUALITY AND SUPERVISION OF AUDIT DURING THE COVID-19 PANDEMIC

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Abstract. This article addresses the issues faced by auditors, audit firms, and the business environment in the country and abroad, during the Covid-19 pandemic crisis, such as remote work and the issue of communication. At the same time, the author describes the solutions offered by the institutions of different states to overcome this crisis. The problems of the audit and control activity of the banking institutions were addressed, as well as the implementation of some software that would allow performing audit remotely. Solutions for facilitating the lending of entities during this period have also been described. Separately, the issue of contractual relations during the pandemic period was addressed. Using different research methods and analyzing the opinions of different auditors and economists, the author was able to present his own conclusions and recommendations in order to overcome this crisis by both audit firms and state institutions.

Keywords: *control, crisis, banking sector, remote activity, contract.*

Rezumat. În articol sunt abordate problemele cu care se confruntă pe perioada crizei pandemice de Covid-19 auditorii, societățile de audit, precum și mediul de afaceri din țară și de peste hotare, cum ar fi lucrul la distanță și problema comunicării. Totodată, autorul descrie soluțiile oferite de instituțiile diferitor state pentru depășirea acestei crize. Au fost expuse problemele activității de audit și control a instituțiilor bancare, precum implementarea unor softuri ce ar permite auditul la distanță. Au fost descrise soluțiile pentru facilitarea creditării entităților în această perioadă. Separat, a fost abordată problema relaţiilor contractuale în perioada de pandemie. Utilizând diferite metode de cercetare și analizând opiniile diferitor auditori și economiști, autorul a reușit să-și expună propriile concluzii și recomandări în scopul depășirea acestei crize atât de către societățile de audit, cât și de către instituțiile statului.

Cuvinte-cheie: *control, criză, sector bancar, activitatea la distanță, contract.*

Introducere

Situațiile de criză economică provocate de pandemii precum cea de Covid-19 sunt imposibil de prognozat, în comparație cu crizele economice ciclice. De aceea, entitățile, inclusiv cele de audit au fost luate prin surprindere de situația creată. Dacă în prima perioadă

se considera că pandemia va decurge într-un timp scurt, ulterior s-a dovedit a fi mai lungă decât se aștepta. Prin urmare, atât autoritățile publice, cât și mediul de afaceri au întreprins măsuri de a se adapta la noile condiții.

În prezentul articol sunt descrise problemele cu care se confruntă auditorii, societățile de audit, precum și mediul de afaceri în perioada acestei pandemii, dar și soluțiile oferite de către instituțiile diferitor state pentru depășirea acestei crize. Totodată, sunt abordate problemele auditului și controlului în instituțiile bancare, dar și problema relaţiilor contractuale în perioada de pandemie.

Analizând opiniile diferitor auditori și economiști din țară, dar și de peste hotare, care s-au expus asupra problemelor societăților de audit și mediului de afaceri în perioada pandemiei de Covid-19, prin metoda de analiză a documentelor, utilizând diferite surse bibliografice, autorul a reușit o descompunere de conținut a problematicii abordate, ceea ce a permis extragerea de soluții pentru depășirea acestei crize.

Totodată, autorul a utilizat și metoda comparativă, care i-a permis să identifice similitudinile și disimilitudinile existente între practicile naționale și internaționale, dar și metoda sintezei, pentru ca în final să poată să-și expună propriile concluzii și recomandări în scopul depășirii acestei crize atât de către societăților de audit, cât și de către instituțiile statului.

Rezultate și discuții

Pe perioada pandemiei de Covid-19, din cauza măsurilor de distanțare socială menite să rezolve criza sanitară, entitățile au fost nevoite să implementeze diferite tehnici și practici de operare de la domiciliu. Reieșind din faptul că clienții își exercitau activitatea la distanță, auditorii au fost nevoiți să se adapteze și să se conformeze la situația nou-creată.

Comisia Europeană pentru Supravegherea Asociațiilor Auditorilor subliniază cele mai importante zone care sunt relevante pentru asigurarea calității serviciilor de audit, cum ar fi: colectarea informațiilor suficiente și relevante de audit, continuarea activității, evenimente, raportarea și comunicarea [1, pag. 10].

Auditorul român Făniță menționează că în această perioadă, auditorii întâmpină dificultăți practice, de la accesarea datelor și documentelor clienților până la timpul necesar pentru evaluarea impactului în business a pandemiei. Devine, așadar, necesară adoptarea unor platforme tehnologice care să facă posibilă îndeplinirea misiunilor de audit concomitent cu respectarea principiului distanțării sociale [2, pag. 16].

Reieșind din cele expuse, auditorul român Făniță propune următoarele soluții de comunicare reieșind din figura 1.

Soluții de tip add-ins	Soluții complexe în cloud	Colaborarea fără limitări geografice	Echipe multidisciplinare
•Constă în instrumente care valorifică puterea cunoscutului Excel. Reduc timpii activităților de verificare.	•Permit urcarea de către clienți a datelor din toate tranzacțiile perioadei și punerea lor la dispoziția auditorului.	•În mediul online se poate stabili mai ușor și rapid calendarul de ședințe în regim de video conferințe	•Lucrând la distanță se poate selecta ușor cel mai bun mix de experți pentru fiecare sarcină indiferent de locație

Figura 1. Soluții de comunicare dintre auditori și clienți care permit lucru la distanță.

Considerăm că este puțin probabil ca pe viitor activitatea de audit să devină complet digitalizată, fără a se produce interacțiunea dintre client și auditor. Chiar dacă tehnologiile informaționale avansează în continuu, totuși credem că interacțiunea fizică este necesară în anumite situații, dar cu păstrarea unor tehnici digitale.

Totuși, în ceea ce privește sectorul de tehnologii, economista Galanton afirmă că entitățile care utilizează pe larg tehnologiile ar suferi cel mai puțin de pandemie. În unele cazuri, au fost semnalate măriri ale cifrei de afaceri în comparație cu aceeași perioadă a anului precedent. Prin urmare, tehnologiile educaționale și rețelele de calculatoare au devenit sectoare cu potențial de creștere. Se preconizează ca aceste sectoare să aibă o evoluție considerabilă în perioada ce urmează, care ar putea schimba complet modul în care gândim despre serviciile virtuale [3, pag. 27].

Auditul bancar în condițiile pandemiei de Covid-19

Economista rusă din sistemul bancar Efremova consideră că nici sistemul bancar nu a trecut ușor peste perioada de distanțare socială. Aceasta menționează că instituțiile bancare din Federația Rusă nu dispun de condiții tehnice de efectuare a auditului sau controlului intern. De aceea, majoritatea lor au pus pe pauză toate rapoartele de audit, în așteptarea vremurilor mai bune [4, pag. 78].

Prin urmare, aceasta recomandă băncilor comerciale să investească în diferite softuri care ar facilita munca auditorilor și care ar permite obținerea informațiilor necesare și prezentarea rapoartelor de audit într-un regim mai rapid. Însă, din cauza crizei financiare provocate de pandemia de Covid-19, instituțiile bancare au un deficit de lichidități, iar implementarea unor astfel de softuri presupune costuri semnificative. Totuși, aceasta propune următoarele căi de automatizare a procesului de audit bancar:

- dezvoltarea operațiunilor de audit și control intern pentru business-procesele bancare;
- elaborarea sarcinilor tehnice de automatizare a proceselor menționate pentru specialiștii IT;
- testarea programelor de automatizare elaborate și prezentarea rezultatelor testării specialiștilor IT;
- înlăturarea erorilor apărute de către specialiștii IT în urma testării programelor;
- darea în exploatare a programelor și deservirea acesteia [4, pag. 80].

Raportând la situația auditorilor și societăților de audit din Republica Moldova, acestea la fel au avut de suferit cheltuieli semnificative pentru procurarea sau elaborarea de programe informatice pentru a digitaliza procesele în timp record pe perioada distanțării sociale, în același timp confruntându-se cu lipsa de lichidități atât a acestora, cât și a clienților care o perioadă nu au activat și nu au avut venituri.

Potrivit economistei Bejan, expertă în domeniul bancar din Republica Moldova, pentru menținerea stabilității sectorului bancar din Republica Moldova în condițiile pandemiei de Covid-19, Banca Națională a Moldovei (BNM) a întreprins următoarele acțiuni:

– diminuarea ratei de bază aplicată la principalele operațiuni de politică monetară pe termen scurt cu 1,25 puncte procentuale, până la 3,25% anual, precum și a ratelor de dobândă la creditele și depozitele overnight până la 6,25% și, respectiv, 0,25% anual;

– micșorarea cu 2,5 puncte procentuale a normei rezervelor obligatorii, din mijloacele atrase în lei moldovenești și în valută neconvertibilă, până la 38,5% din baza de calcul, precum și majorarea cu 1,0 puncte procentuale a normei rezervelor obligatorii, din mijloacele atrase în valută liber convertibilă, până la 21,0% din baza de calcul;

– susținerea persoanelor fizice consumatori de credite bancare, prin gestiunea flexibilă a obligațiilor debitorilor aflați în dificultate de plată;

– relaxarea cerințelor amortizorului de conservare a capitalului constituit anterior, prin permiterea utilizării temporare a acestuia, pentru a absorbi eventualele înrăutățiri ale calității portofoliului de credit și a sprijini finanțarea mediului de afaceri și a populației [5, pag. 78].

Din cele relatate mai sus, observăm că odată cu declanșarea pandemiei de COVID-19, BNM a depus eforturi în vederea realizării măsurilor de atenuare a impactului unei eventuale crize, ceea ce la fel influențează și societățile de audit, tendință care a fost întâlnită și la nivel internațional. Prin urmare, societățile de audit care au contractat credite, puteau să negocieze termenele contractuale ale acestora. Totodată, BNM a permis băncilor comerciale o supraveghere mai aprofundată a activității clienților săi, pentru a evita situațiile de risc.

Acțiuni și soluții pentru depășirea crizei pandemice la nivel internațional

Diferite state au acționat diferit pentru a ajuta mediul de afaceri pentru a trece cu succes peste criza financiară provocată de pandemia de Covid-19.

Economista din Federația rusă Sanghinova consideră că cea mai mare problemă a constituit prăbușirea relației dintre cerere și ofertă în această perioadă. Însă, statul rus a ajutat doar business-ul mic cu sume simbolice, pentru susținerea angajaților, nu și entitățile din alte domenii, inclusiv cele din domeniul auditului. Totodată, entităților mici le-a fost rambursat impozitul pe venit achitat pentru anul 2019 [6, pag. 24].

Suedia, singura țară din Uniunea Europeană și una dintre foarte puținele țări ale lumii, care nu a impus nici o restricție, la fel s-a îndreptat spre o recesiune mai mare decât criza financiară din 2008. Totuși, în pofida celor expuse, guvernul suedez a aprobat stimuli fiscali fără precedent, după cum afirmă economistul Dobrescu [7, pag 54].

În cazul Marei Britanii, acest stat se confruntă cu cea mai mare criză economică a țării din ultimii 300 de ani, cauzată de coronavirus. Potrivit unor estimări făcute de Banca Angliei, economia țării va scădea cu 14% în 2021. Totuși acest stat a elaborat un plan bine structurat de susținere a mediului de afaceri. Prin urmare, după încheierea programului de șomaj tehnic, guvernul Marii Britanii plătește până la două treimi din salariile celor care lucrează cu program redus din cauza noilor restricții impuse în contextul pandemiei. De asemenea, s-a extins programul de suport financiar pentru freelanceri și o reducere de TVA de 15% a TVA-ului pentru turism și sectorul de hoteluri, restaurante și catering (HoReCa), precum și ajutor companiilor care trebuie să achite ratele împrumuturilor garantate de guvern [8, pag. 56].

Economistul român Pașa consideră că România se confruntă cu o dereglare importantă a tuturor activităților productive și de servicii cauzată de pandemia de Covid-19. Pentru a depăși această situație, acesta propune următoarele soluții:

- realizarea unui împrumut extern pentru sprijinirea agenților economici să-și continue activitatea fără să renunțe la forța de muncă angajată;
- utilizarea forței de muncă repatriată din diaspora;
- atragerea împrumuturilor de la cetățeni cu dobânzi superioare celor practicate de bănci [9, pag. 48].

Considerăm că toate măsurile de redresare a situației economice a țărilor afectate de pandemia de Covid-19 au influențat și activitatea de audit atât direct cât și indirect. Prin urmare, prin compensarea plăților salariale ale celor care au lucrat cu program redus din cauza pandemiei, au fost susținuți direct și angajații companiilor de audit și ai autorităților de control și supraveghere a auditului. Totodată, prin susținerea celorlalte ramuri ale

economiei, clienții societăților de audit nu se vor confrunta cu lipsa de lichidități și vor putea contracta servicii de audit.

Acțiuni și soluții pentru depășirea crizei pandemice în Republica Moldova

În ceea ce privește efortul Guvernului Republicii Moldova de a evita o criză economică provocată de efectele pandemiei de Covid-19, economiștii Petroia și Zubcova consideră că acesta s-a axat mai mult pe ajutorul oferit sistemului medical, decât economiei în ansamblu. Prin urmare, anul 2020 a devenit anul cu cea mai mare investiție în sănătate ca procent din PIB din ultimii 3 ani. Pe un fond puternic de instabilitate financiară și posibilă recesiune, sănătatea a devenit prioritară [10, pag. 65].

În opinia noastră, acest fapt este unul inevitabil, însă pe lângă investițiile în sănătate, era necesară o atenție mai mare din partea guvernului și pentru sectorul real pentru menținerea pe linie de plutire a situației economice din țară, iar indirect, și susținerea activității de audit.

Auditorii trebuie să fie informați și despre modificările, ajustările și interpretările din legislația fiscală, care au survenit odată cu pandemia de Covid-19. Auditorul Slobodeanu enumeră mai multe cazuri de acest fel, printre care:

- *deductibilitatea testării angajaților din contul angajatorului* – Ministerul Finanțelor precum și Serviciul Fiscal de Stat interpretează testarea angajaților de către angajatori ca facilitate acordată de patron, din care urmează a fi calculate toate reținerile ce țin de contribuțiile de asigurări sociale, prime de asistență medicală și impozitul pe venit din salariu. Toate aceste rețineri sunt deductibile în scopuri fiscale, dacă sunt calculate în mod corespunzător;
- *cheltuielile/ costurile aferente măștilor, vizierelor, dezinfectanților utilizați în activitatea entităților* – pandemia de Covid-19 a forțat includerea în bugetare și planificare a acestor cheltuieli, care anterior nu existau. Organul fiscal recunoaște în totalitate deductibilitatea acestor cheltuieli/ costuri;
- *subvenționarea ratei dobânzii* – prevede rambursarea de către stat din întreaga sumă sau parțial dobânda acumulată și plătită pentru împrumuturile acordate de sectorul financiar. În legislație se menționează în mod clar că valoarea acestor subvenții este o sursă de venit care nu este supusă impozitului pe venit;
- *susținerea activității antreprenoriale și atenuarea consecințelor negative cauzate de situația epidemiologică* – entitățile care și-au încetat complet sau parțial activitățile în conformitate cu deciziile Comisiei Naționale Extraordinare de Sănătate Publică și/sau cu ordinele Comisiei pentru Situații Excepționale a Republicii Moldova au dreptul la subvenții în valoarea sumei plătite a impozitului pe venit din salariu, contribuțiile de asigurări sociale și primele de asistență medicală aferente salariilor plătite angajaților care s-au aflat în șomaj tehnic;
- *transportul de la locul de reședință la locul de muncă și înapoi prin serviciile companiilor de taxi* – acest lucru se face, în primul rând, pentru a minimiza riscul de infectare a angajaților în timp ce se deplasează în transportul public. Legislația fiscală permite deducerea cheltuielilor efectuate pentru transportul organizat al angajaților și anume 35 lei (fără TVA) per angajat pentru fiecare zi lucrată efectiv de angajatul transportat, care a folosit transportul organizat [11, pag. 11].

Considerăm că toate aceste prevederi sunt cunoscute, deoarece ele nu sunt recente. Doar că odată cu situația creată de pandemia de Covid-19, a apărut necesitatea interpretării

lor de către organele statului pentru a înțelege modul de reflectare și deducere a lor. Prin urmare, auditorii ar trebui să le cunoască atât pentru activitatea proprie cât și pentru analiza acestor cheltuieli la clienți.

Relaţiile contractuale în perioada de pandemie

Avocatul Tărîţa descrie și o altă situație problematică provocată de criza pandemică și anume impactul acesteia asupra relaţiilor contractuale. În opinia acestuia, mulţi antreprenori (printre care și auditorii sau societățile de audit) s-au ciocnit cu dificultăţi în executarea obligaţiilor faţă de parteneri pe care şi le-au asumat prin contracte de lungă durată, încheiate până la instituirea de către autorităţi a măsurilor restrictive. În astfel de circumstanţe, inevitabil, a apărut întrebarea dacă pandemia şi măsurile aplicate constituie temei pentru rezoluţiunea sau modificarea obligaţiilor, precum şi pentru scutirea de răspundere pentru neexecutarea lor.

În opinia acestuia, legislaţia naţională prevede trei concepte juridice care pot fi aplicate relaţiilor contractuale în situaţii de criză:

1) justificarea datorită unui impediment (anterior – forţa majoră) – cel mai răspândit eveniment care influenţează prevederile generale cu privire la responsabilitatea părţilor contractante este forţa majoră. Survenirea acestuia îi permite părţii să nu îşi execute obligaţiile asumate prin contract şi, totodată, să-şi limiteze responsabilitatea pentru neexecutare (în cazul respectării unui şir de condiţii).

2) imposibilitatea fortuită de executare – teoretic, coronavirusul şi consecinţele acestuia pot stinge, în genere, obligaţiile contractuale, adică nu doar absolvă de răspunderea pentru neexecutarea lor, cum ar fi în cazul forţei majore. Este important de reţinut că imposibilitatea executării obligaţiei nu trebuie să fie temporară, ci permanentă şi definitivă. Anume imposibilitatea permanentă şi definitivă este principalul criteriu prin care forţa majoră se deosebeşte de imposibilitatea fortuită de executare.

3) schimbarea excepţională a circumstanţelor – pentru a deosebi forţa majoră de schimbările excepţionale ale circumstanţelor ne vom conduce de următoarea logică. În cazul forţei majore circumstanţa trebuie să blocheze complet executarea obligaţiei şi nu doar să o complice. De exemplu, dacă în urma răspândirii virusului termenul executării obligaţiei se majorează (de exemplu, termenul misiunii de audit) sau dacă în urma instituirii de către autorităţi a măsurilor de interdicţie, societatea de audit nu îşi poate continua activitatea, se va constata schimbarea excepţională a circumstanţelor [12, pag. 74].

Considerăm că forța majoră și schimbarea excepțională a circumstanțelor ar fi cel mai răspândite relații contractuale care ar putea fi aplicate în situația pandemiei de Covid-19, deoarece ele ar fi mai apropiate de domeniul activității de audit. Imposibilitatea fortuită de executare are un caracter definitiv, ceea ce ar împiedica ducerea la bun sfârșit a unei misiuni de audit, în comparație cu celelalte două relații contractuale, care permit finalizarea misiunii cu o anumită modificare a termenelor.

Concluzie

Activitatea la distanță a devenit o provocare pentru auditori. În perioada de distanțare socială societățile de audit au avut de suferit cheltuieli semnificative pentru procurarea sau elaborarea de programe informatice pentru a digitaliza procesele în timp record, confruntându-se cu lipsa de lichidități atât a acestora, cât și a clienților, care o perioadă nu au activat și nu au avut venituri. Considerăm că este puțin probabil ca pe viitor activitatea de audit să devină complet digitalizată, fără a se produce interacțiunea dintre client și auditor.

Chiar dacă tehnologiile informaționale avansează în continuu, totuși credem că interacțiunea fizică este necesară în anumite situații, dar cu păstrarea unor tehnici digitale.

Și BNM a depus eforturi în vederea realizării măsurilor de atenuare a impactului unei eventuale crize, ceea ce la fel influențează și societățile de audit. Prin urmare, societățile de audit care au contractat credite, puteau să negocieze termenele contractuale ale acestora. Totodată, BNM a permis băncilor comerciale o supraveghere mai aprofundată a activității clienților săi, pentru a evita situațiile de risc.

În opinia noastră, toate măsurile de redresare a situației economice a țărilor afectate de pandemia de Covid-19 au influențat și activitatea de audit atât direct cât și indirect. Prin urmare, prin compensarea plăților salariale ale celor care au lucrat cu program redus din cauza pandemiei, au fost susținuți direct și angajații companiilor de audit și ai autorităților de control și supraveghere a auditului. Însă în Republica Moldova, cu excepția unor interpretări fiscale în favoarea deductibilității unor cheltuieli, credem că nu au fost aprobate soluții necesare pentru susținerea activității societăților de audit.

Considerăm că forța majoră și schimbarea excepțională a circumstanțelor ar fi cel mai răspândite relații contractuale care ar putea fi aplicate în situația pandemiei de Covid-19, deoarece ele ar fi mai apropiate de domeniul activității de audit.

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LACTOSE INTOLERANCE AND THE IMPORTANCE OF LACTOSE-FREE DAIRY PRODUCTS IN THIS CONDITION (Review)

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Abstract. The paper is a review of the importance of expanding the lactose-free dairy segment to give consumers the opportunity to consume milk and dairy products if they suffer from lactose intolerance. When there is a lactase deficiency in the body, in the small intestine lactose is not hydrolyzed, the volume increases and the fluidity of the intestinal contents increases, allowing lactose to reach the colon where it is fermented by colonic bacteria. Lactose intolerance is a condition that depending on the form developed will show different symptoms and consumers suffering from this disease may ingest amounts between 12-24 g of lactose consumed during a day, taking into account certain recommendations, compared to allergy to milk proteins, where the consumption of dairy products is prohibited. Due to the rich intake of important macro and micronutrients in human nutrition, dairy products cannot be missing from the daily diet. In this context, methods are proposed, in particular ultrafiltration, for obtain free lactose milk that does not affect its composition and properties. Consumers suffering from lactose intolerance should be properly informed about the lactose content in manufactured lactose-free dairy products. This can be done after using high-performance instrumental methods of analysis that can detect the lowest values of lactose content in dairy products.

Key words: *free lactose milk, lactose, lactose intolerance, milk, milk allergy.*

Rezumat. Lucrarea prezintă o trecere în revistă a importanței extinderii segmentului de lactate fără lactoză pentru a oferi consumatorilor posibilitatea de a consuma lapte și produse lactate chiar dacă suferă de intoleranță la lactoză. Atunci când există un deficit de lactază în organism, în intestinul subțire lactoza nu este hidrolizată, volumul creste si fluiditatea conținutului intestinal creste, permițând lactozei sa ajungă in colon unde este fermentata de bacteriile colonice. Intoleranța la lactoză este o afecțiune care, în funcție de forma dezvoltată, va prezenta simptome diferite. Consumatorii care suferă de această boală pot ingera cantități cuprinse între 12-24 g de lactoză consumate pe parcursul unei zile, ținând cont de anumite recomandări, spre deosebire de alergia la proteinele din lapte, unde este interzis consumul de produse lactate. Datorită aportului bogat de macro și micronutrienții importanți pentru alimentația umană, produsele lactate nu pot lipsi din alimentația zilnică. În acest context,

sunt propuse metode, în special ultrafiltrarea, pentru obținerea laptelui fără lactoză. Consumatorii care suferă de intoleranță la lactoză ar trebui să fie informați în mod corespunzător cu privire la conținutul de lactoză din produsele lactate, fabricate fără lactoză. Acest lucru se poate face după utilizarea unor metode instrumentale de analiză performante care pot detecta valorile reale ale conținutului de lactoză din produsele lactate.

Cuvinte cheie: *lapte fără lactoză, lactoză, intoleranță la lactoză, lapte, alergie la lapte.*

Lactose provinience

Lactose is a naturally disaccharide of milk (Figure 1) (it is less contained in cow's milk compared to breast milk) [1, 2]. Is a disaccharide that must be cleaved by enzyme lactase, into glucose and galactose [3, 4].
The body then absorbs these simpler sugars into the bloodstream.

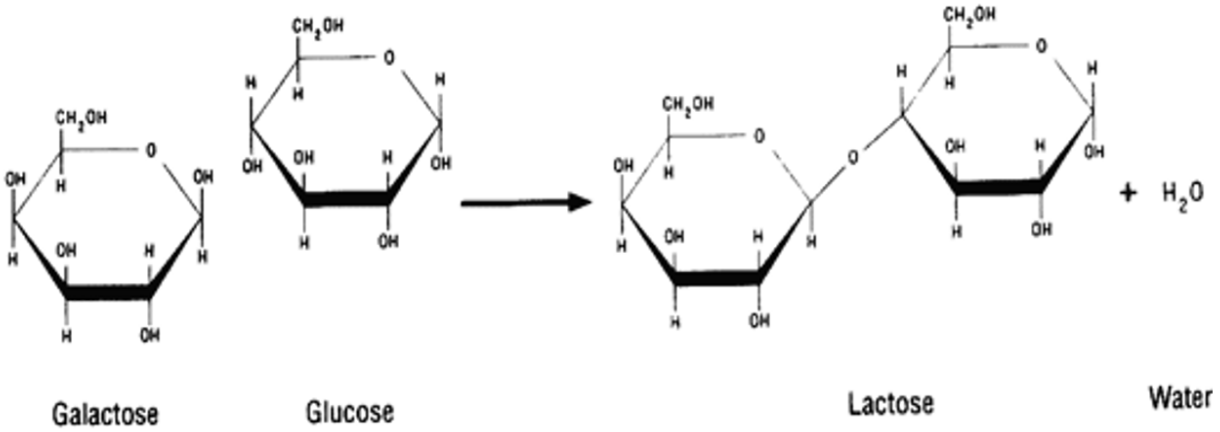

Figure 1. Lactose formation by a condensation reaction between glucose and galactose.

Lactose is an important component of the carbohydrates group important in the diet from an early age, due to the fact that it is a good source of energy [2, 5]. Studies by various scientists show that lactose promotes better absorption of calcium, magnesium, zinc, manganese and other minerals. Lactose promotes the development of beneficial bacteria in the intestinal tract and prevents the development of pathogenic ones [5].

Intolerance to lactose

Lactose intolerance is manifested in people whose body lacks lactase or is in small amounts. [6]. Lactase that is present in the intestinal epithelium breaks down lactose into glucose and galactose.

The symptoms of lactose intolerance (Figure 2) are specific to each individual, and their manifestation depends very much on the amount of lactose ingested and lactase reserves in the consumer's body. [7].

Lactase is located in the microvilli of the small intestine. When the lactase enzyme is deficient, the amount of unhydrolyzed lactose reaches the colon. Under the action of the microflora in the colon, lactose is fermented, and as a result a certain amount of lactic acid and hydrogen is formed, a process that leads to the formation of gases in the colon (Figure 3). Lactase deficiency is not always associated with lactose intolerance. Only about 50% of lactase activity is required for efficient digestion of lactose [1, 9].

Lactose intolerance exists of several types, depending on the amount of lactase formed in the body and the severity of symptoms.

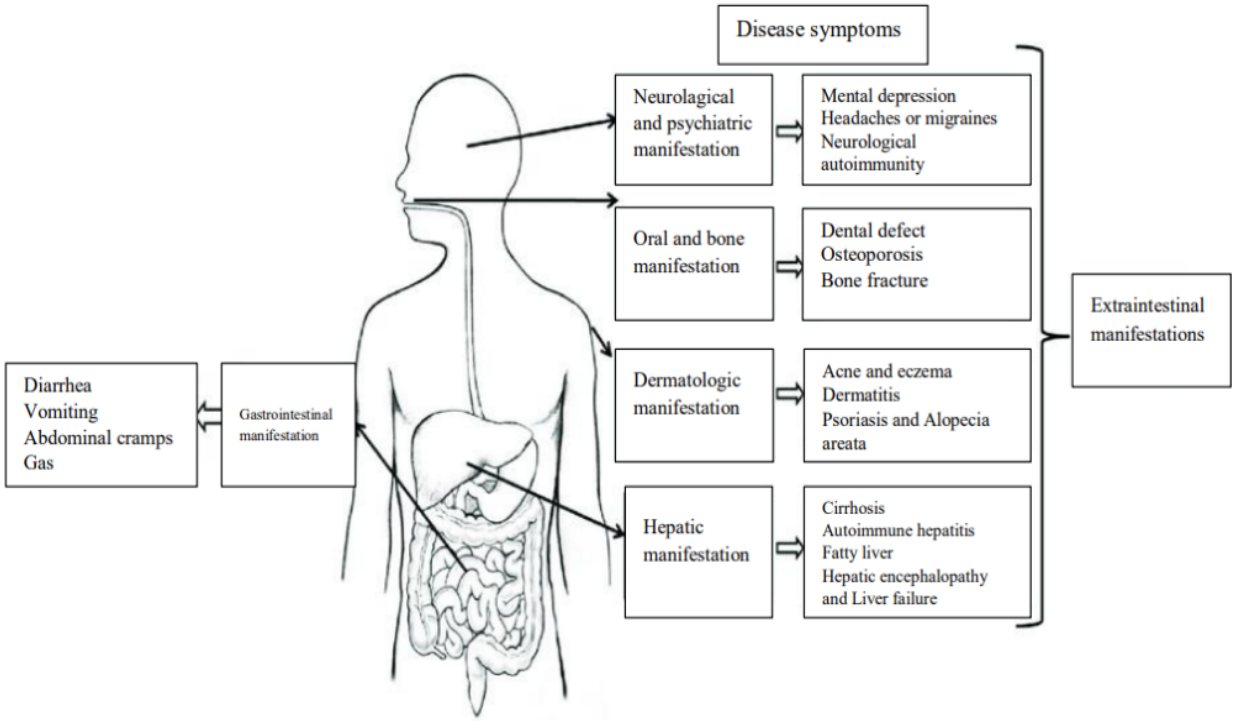

Figure 2. Manifestations of lactose intolerance, [8].

The primary lactase deficiency is specific to the partial or total lack of lactase that can develop in childhood at different ages, being a common cause of malabsorption or lactose intolerance. The primary lactase deficiency is recognized as: adult hypolactasia, lactase deficiency or hereditary lactase deficiency. Primary lactase deficiency manifests about 70% of the world's population.

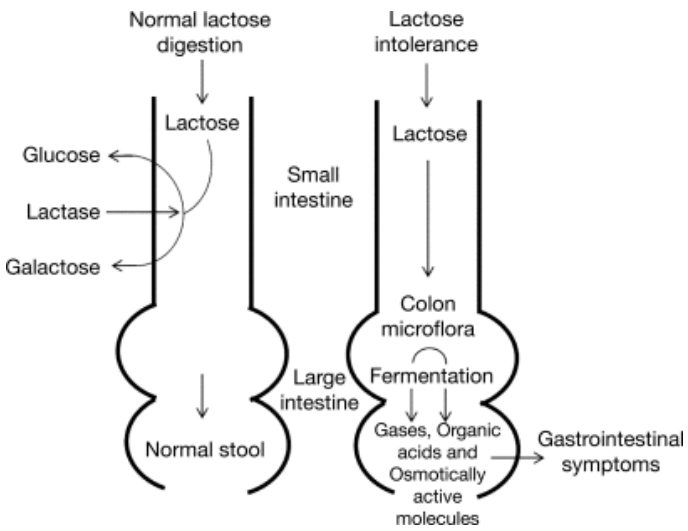

Figure 3. Lactose digestion in the colon [10].

Secondary lactase deficiency is the lactase deficiency that results from lesions of the small intestine (acute gastroenteritis, diarrhea) is defined as secondary deficiency, which can occur at any age even from the youngest.

Congenital lactase deficiency is very rare in patients. In this case lactose is practically absent from the small intestine.

Developing lactase deficiency manifests itself as a time-consuming condition, more often seen in premature babies, which usually disappears with the growth of children [1, 11].

Lactose intolerance is a condition that is not dangerous to the health of the consumer [9, 12, 13].

Milk is an indispensable food product in human nutrition, especially in children's nutrition, a hypothesis supported by EFSA. That is why recommending a lactose-free diet is a very delicate issue. In this context, in order to confirm the presence of this condition, it is recommended that patients take recognized lactose tolerance tests.

Research shows that consuming a maximum 12 g of lactose in the case of people with lactose intolerance results in no minor symptoms. Larger amounts of lactose can also be tolerated if they are properly distributed between meals.

Table 1

Domination of primary lactase deficiency, [11]

Groups of people where the incidence of total or partial lactose deficiency is 60 - 100%
Examples: Arabs, Greek Cypriots, Thais, Indonesians, Chinese, Koreans, South Nigerians, Hausa, black Americans, Latinas, Eskimos, Canadian and American Indians, Chami Indians, etc.
Groups of people where the incidence of total or partial lactose deficiency is 2 - 30%
Examples: Northern Europeans, Hima, Nomadic Fulani**,** individuals from Punjab and New Delhi, etc.

Among the European adult population, the incidence of lactose intolerance is between 4% and 56%. The lowest rate (4-5%) was recorded among the population of Northern Europe, (Table 1) [14].

Lactose intolerance and milk protein allergy.

Allergy is a disease of the immune system caused by some food / environmental agents, causing serious health problems to people.

The major food groups considered allergic are: peanuts, cow's milk, eggs, nuts, fish, shellfish, soy and wheat. In the case of cow's milk, the major allergic component is considered casein and alpha lactoalbumin and beta lactoblobulin. The symptoms of milk protein allergy can manifest immediately after ingesting the food or even after 72 hours, manifesting some of the following symptoms: hives, swelling, nausea and wheezing [12, 14].

Lactose intolerance is related to milk sugar which is found naturally in milk.

The lack of a proper and correct process of hydrolysis of lactose in the small intestine leads to the appearance of symptoms specific to lactose intolerance, which in the case of a correct consultation cannot be associated with allergy to milk proteins.

People who show symptoms specific to allergy to milk components are advised to remove dairy products from the diet, while in case of lactose intolerance they are advised to keep under strict record the amount of lactose consumed in a single intake (during or at the end of the meal), which must not exceed 12 g of lactose.

People with lactose intolerance are allowed to consume dairy products where the amount of lactose has decreased due to the process of lactic fermentation that occurred in the manufacture of those products: yogurt, matured cheeses, fresh cheese, [9, 13, 14].

Unlike cow's milk protein allergy, lactose intolerance is not a disease. (Table 2).

Table 2

Lactose intolerance vis-a-vis an allergy to cow's milk protein, [1, 3, 4, 15, 16]

Cause	Lactose Intolerance	Allergy to cow's milk protein (casein and whey protein)
Predominance (EU)	Between 4-56 %	1 % - in children, 0.5 % in adults
Symptoms	Bloating, flatulence and abdominal pain, diarrhea	urticarial, vomits, acute dermatitis and so on
Diagnosis	Lactose intolerance test, Hydrogen breath test, Intestinal biopsies	Skin prick and blood tests for antibodies
Prognosis	It can evolve as temporary or permanent. Most people with LI tolerate small amounts of lactose.	50% of cases progress and are treated by the age of 12 months; 90% - up to the age of 3 years.
Management	Based on the type of lactose intolerance, the amount of lactose (milk and dairy products) that can be consumed is determined. Fermented dairy products can be consumed by patients with lactose intolerance.	Milk or Dairy exclusion (medical and nutritional supervision)

Lactose present in milk and dairy products

The production of lactose-free or low-lactose milk / dairy products has an upward trend, which makes it possible to consume dairy products among people suffering from lactose intolerance without showing any symptoms of this condition [17].

People with lactose intolerance can tolerate up to 12 g of lactose in a single serving [18]. The tolerance level of people with lactose intolerance actually appreciates the amount of lactose that can be consumed daily, however it is allowed to consume different dairy products in small quantities and correctly distributed per day [2, 14, 19, 20].

According to EFSA (European Food Safety Authority) yogurt is a product indicated in the diet of lactose intolerant people because the beneficial bacteria in yogurt (*Lactobacillus delbrueckii susp. Bulgaricus and Streptococcus thermophiles*) in amounts of 10^8 cfu / gram, improve lactose digestion [21]. Consumption of dairy products is very important for people, because it ensures the assimilation of macro and micronutrients essential to health, mainly calcium intake. For example, a 30 g serving of cheese or 250 g of yogurt or 250 ml of milk contains about 300 mg of calcium. The same amount of calcium can be covered by eating 3 kg of fruit or 750 g of vegetables, (Table 3) [22].

Preventive strategy to maintain good health regarding lactose intolerance includes:

• general hygiene conditions

- Hygiene in food and water
- Proper hand washing

• Diets (advices) (Table 4)

- Well-balanced diet
- Introduction of fiber in the diet

Table 3

Lactose Content of Common Foods [11, 23, 24, 25, 26, 27, 28, 29]

Dairy Products	Lactose Content, g/100g
Yogurt	4
Milk	4
Skim milk	4,3-5,7
Cream	0,1
Butter	0,8
Edam, Gauda cheese	>0,5
Parmiggiano cheese	>0,4
Cheddar	0,09-0,5
Cottage	1,0-3,1
Mozzarella	0,1-1,59
Cheese (goat)	2,2
Ice cream	3,6-8,4
Kefir	~4,0
Condensed milk	9,9-14,0
Evaporated milk	10-11
Whey	5,1

- Avoidance / exclusion of processed foods from the diet
- Choosing a low tempo for food consumption
- Beware of consuming products that cause allergies
- Drinking of lot of fluids (non-sugar based)

• Maintenance of healthy gut microbiota
- Introduction of probiotics and prebiotics in the daily diet
- Maintenance of hygiene rules

• Avoidance / exclusion of harmful substances that can reach the intestine
- Smoking
- Drugs which damages intestinal mucosa,
- Alcohol

• Preserving the integrity of the epithelium,
• Maintenance of enterocytes, [30].

Table 4

Foods allowed / prohibited in lactose intolerance, [1, 31]

Food - to be avoided	Food – to be allowed
• Milk: whole, low-fat, nonfat, cream, powdered, condensed and evaporated • Chocolate-containing milk • Butter, cottage cheese, ice cream, creamy/cheesy sauces, cream cheeses, soft cheese and mozzarella • Cream • Milk, bread, crackers • Muffin, waffle, pancake, biscuit • Bakery products	• Lactose-free milk, soy milk • Lactose-free milk and dairy products, hard cheeses • Yogurts containing live cultures • Kefir • Fruits • Vegetables • Legumes • Cereals • Meat, fish, eggs • Vegetable fats

Development of lactose-free foods

Given that nowadays the consumer is well informed about the food composition to be consumed and how it can influence his health, there is a rising demand for healthy products [32], even more serious in choosing the right foods are consumers suffering from any health conditions / diseases. Also today, people with lactose intolerance are offered a rich assortment of milk without lactose of nonlactic origin. Following a strict lactose-free diet can lead to serious immune or colon health problems [33], due to deficiencies in some macro or micronutrients. Of course, the easiest way to avoid lactose in the daily diet of a person suffering from lactose intolerance is to eliminate dairy products from the diet [34], but the patient must keep in mind that milk and dairy products are foods that come with a very important intake of nutrients for the consumer health, first of all being a rich source of calcium, (Table 5) [20].

Table 5

Calcium content in low lactose milk, [8]

Sources	Calcium, ppm
Soy milk	3.90
Rice milk	1,5-1,6
Coconut milk	9,40
Lactose hidrolysed milk	112,7-120

Dairy products, such as cheese, yogurt, can meet the calcium requirement of people with lactose intolerance [35] and at the same time keep the lactose intake within the recommended limit.

For these reasons the focus should be on expanding the range of lactose-free foods in the dairy group.

Dekker et al. (2019) emphasized that for all milk production, low-lactose products ensure market expansion by mobilizing groups of consumers who do not attended common dairy products [36].

The growth of the lactose-free dairy market is impressive, showing the fastest growth in the field. By 2022, an increase of 7.3% is expected compared to 2.3% we have today, reaching the figure of 9 billion euros, data extracted from a Euromonitor analysis (Figure 4) [37]. In the Republic of Moldova, no lactose-free dairy products are produced, these being provided only for import.

In the category of lactose-free milk and dairy products, the production and consumption of lactose-free milk comes first, followed by acidic dairy products, namely yogurt (Figure 4), [38].

At the industrial scale, several methods are used to break down lactose into raw milk, depending on the facilities and infrastructure of the factory.

The use of lactase (β-galactosidase) for the breakdown of lactose is considered the basic method in the manufacture of lactose free dairy products.

β-galactosidase, the enzyme responsible for the hydrolysis of lactose, is widely used in the dairy industry for the hydrolysis of lactose in milk and whey. β-Galactosidase is an enzyme that can be found in plants, animal organs and microorganisms.

For the hydrolysis of milk lactose, yeast enzymes are usually used, which have an optimal neutral pH, and for the hydrolysis of whey lactose, fungal galactosidases (Aspergillus sp.) With optimal acid pH are used [39 - 41].

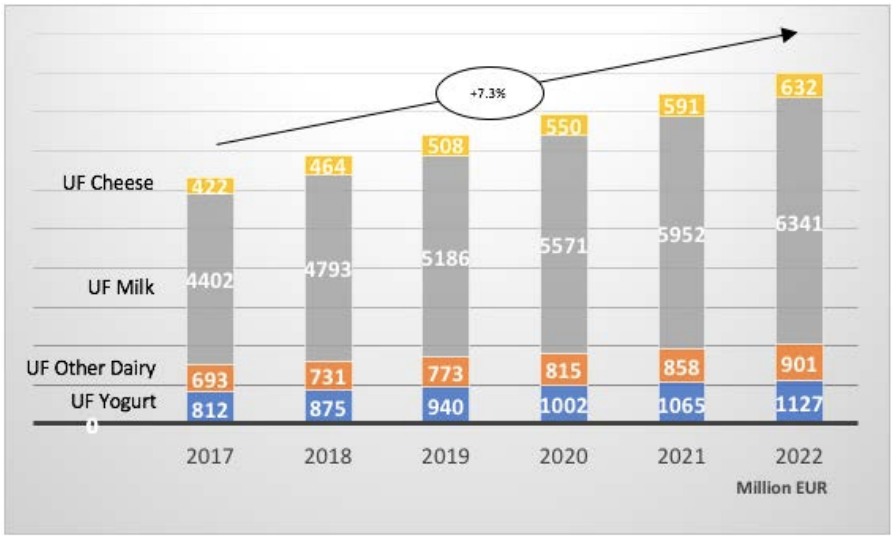

Figure 4. Growth rate of the lactose-free dairy market segment for the period 2017–2022 [37, 38].

At the industrial scale 2 methods are used: pre-hydrolysis or batch process and post hydrolysis or aseptic process.

The stages of the pre-hydrolysis process are:

a. introduction of neutral lactase into milk;

b. cooling the milk to 4-8 ° C and maintaining it at this temperature throughout the process;

c. incubating the milk for 24 hours, with continuous stirring

d. classical pasteurization of milk;

e. classical homogenization of milk;

f. milk packaging.

Milk is heat treated, which reduces residual enzyme activity to a minimum which is an advantage of regulation and labeling in some countries [38].

Stages of the post-hydrolysis process are:

a. heat treatment of milk by UHT technique;

b. introduction of the sterile lactase into milk;

c. milk packaging;

Lactase hydrolysis occurs in the package, during the storage of milk at the enterprise, for 3 days at ambient temperature. This period is sufficient for lactose to be bound to monosaccharides. The milk is then distributed for sale [38].

The breakdown of the total amount of lactose in milk (approximately 4.8%) into glucose and galactose can lead to a lactose-free product with a higher degree of sweetness (Table 6) and specific flavor compared to normal milk. These defects in the finished product are considered major challenges for operators in the lactose-free dairy industry, [42]. An alternative to avoid the appearance of sweet taste in milk is to use different filtration methods such as microfiltration, nanofiltration, ultrafiltration and reverse osmosis, through filtration membranes a part of lactose is separated, after which the classical process continues (Figure 5), or chromatography techniques (combined with the hydrolysis of the remaining lactose) are used [43, 44].

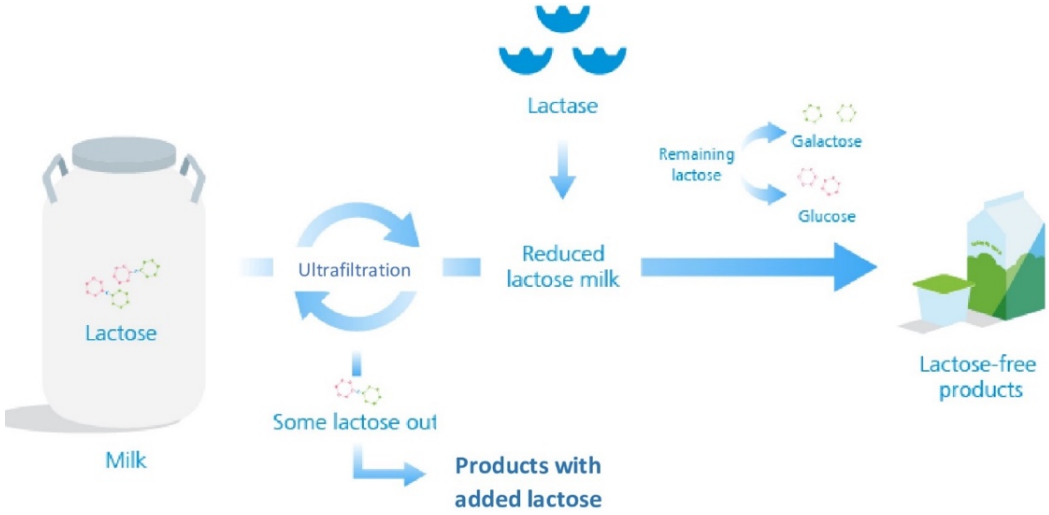

Figure 5. Production of lactose free products, [42].

Table 6

Comparative characteristics of lactose-free and whole milk [45]

Characteristics	Lactose-free milk (ultrafiltration)	Milk with a low lactose content (lactose enzymatic hydrolysis)	Milk
Lactose content	<0,01%	<1%	4,8%
Taste	Natural taste	Sweet taste	Natural taste
Carbohydrate content	35% less carbs, 20% fewer calories	Identical content to natural milk	Natural

The result is excellent quality milk that tastes almost identical to regular milk [6].

Carbohydrates have a great influence on the quality indices of dairy products [46] and in their category can be not only glucose and galactose resulting from the breakdown of lactose, could form significant amounts of lactulose, formed by isomerization of lactose at high temperatures. The amount of lactulose present in lactose-free milk is an important analytical indicator of the milk heat treatment it has undergone. Checking the severity of the heat treatment performed by analyzing the lactulose content allows to detect fraud and distinguish the type of heat treatment applied [47].

There are different types of lactose-free cheeses on the market [6]. Lactose from cheese is separated at different stages of the technological manufacturing process: whey separation and bacteria fermentation [48].

Lactose-free cheeses are made by incubating milk with lactase before the technological operations specific to the cheese-making process, a technique applied in particular to the manufacture of fresh cheeses, which have a higher whey content and are not fully matured and therefore in which could remain a higher lactose content without the use of lactase [38, 49].

While in matured cheeses the lactose content can be reduced to a minimum and without incubating the milk with lactose, because the manufacturing process of matured cheeses requires the elimination of a larger amount of whey from the cheese during ripening (30, 60, 180 days). lactic acid bacteria consume virtually all the lactose present in cheese. The

more a cheese has been ripened, the less lactose remains in the final product; therefore, the concentration of lactose in hard (highly ripe) cheeses is low and can be easily tolerated by most people with primary lactose intolerance [6].

Yogurt is a fermented dairy product that has in its composition bacteria (*L. delbrueckii subsp. Bulgaricus and S. thermophilus*), introduced with the starter culture. Due to these bacteria that produce β-galactosidase in yogurt and produce lactose digestion in vivo, people with lactose intolerance can consume yogurt without having any symptoms of the given condition [6, 49].

Studies show that after fermentation of yogurt, a large amount of lactose remains in the product. When consuming yogurt, the microorganisms in yogurt, which contain intracellular β-galactosidase, retain their viability to the small intestine where they release β-galactosidase into the lumen [50], which participates in the hydrolysis of lactose.

However, several research results say that the capabilities of these microorganisms may vary in the process of digesting lactose [50, 51, 52, 53]. The European Food Safety Authority (EFSA) has examined human clinical trials evaluating the efficacy of yogurt in improving lactose digestion [21]. According to the expert group, there is sufficient evidence that there is a cause-and-effect association between yogurt consumption and improved lactose digestion when consuming yogurt with a microbial load of at least 10^8 cfu / gram [21].

Instrumental analysis of sugar content in lactose-free dairy products

The correct choice of lactose-free dairy products by consumers suffering from lactose intolerance is guided by the correct labeling of these products. Declarations indicating the absence or reduced presence of lactose in food should be regulated under Regulation no. 1169/2011 (EU, European Union) [54], and minimum / maximum limits for lactose intolerance to lactose and galactosemia [14, 55].

To be labeled 'lactose-free', milk must contain <0.01% (w/w) lactose. Identifying the low amount of lactose is usually a very difficult process that can only be achieved by using sensitive and accurate methods. Until there is not a standardized method for determining the lactose content that allows the identification of low amounts of lactose in lactose-free dairy products [56]. According to the literature, there are innovative methods for quantifying lactose at low milk levels (Table 7).

Table 7

Sensitive and specific methods for the determination of residual lactose content

Instrumental Analysis	Extraction Technique	LOD-LOQ ($mg \cdot L^{-1}$ or $mg \cdot kg^{-1}$)	Products	Reference
HPAEC-PAD	Liquid extraction, filtration, purification by Thermo Scientific Dionex OnGuard IIA, 2.5 cc cartridge	MDL: 0.5-30 in water	whole milk, lactose-free milk, yogurt, lactose-free cheese	[58]
HPAEC-PAD	Heated microwave extraction by water, sonication, filtration, extraction, filtration, SPE sulfonic acid bonding column, filtration	LOD: 1.4-2.5 LOQ: 2.6-4.1	hard cheese	[59]

Continuation Table 7

HPAEC-PAD	Dilution, centrifugation, ultrafiltration.	LOQ: 10	milk, yoghurt, chocolate drink, whipped cream, vanilla custard, cream cheese, margarine, firm cheese, whipped cream, chocolate hazelnut cream	[62]
HPAEC-ECD	Incubation, clarification, filtration	LOD: 100	milk, fermented milk and lactose-free milk products	[60]
UHPLC-MS/MS	Defatting, clarification, dilution	LOD: 0.023-0.050 LOQ: 0.123-0.157	UHT milk	[61]
HILIC–MS/MS	Liquid extraction, filtration	LOQ: 15	raw, whole, semi-skimmed and skimmed milk	[63]
LactoSensR Amperometry Method	Homogenization, dilution, biosensor assay kit	LOQ: 50–80	low-lactose and lactose-free milk, milk products, products containing dairy ingredients	[64]
Lactulose Assay Kit Enzymatic method	Extraction, glucose removal pre-treatment, spectrophotometry at 340 nm	LOD 0.79 LOQ 2.65 for liquid samples LOD 0.13 LOQ 0.44 for solid or semi-solid samples.	low-lactose and lactose-free milk and dairy products	[65]
Freezing point depression	-	-	low-lactose and lactose-free milk	[56]

LOD: Limit of Detection, LOQ: Limit of Quantification, MDL: Method Detection Limit.

Impressive limit of detections (LODs) were achieved with high-performance anion-exchange chromatography with pulsed amperometric detection (HPAEC-PAD) [58, 59, 62], ultra-high performance chromatography coupled to tandem mass spectrometry (UHPLC-MS/MS) [61], hydrophilic interaction liquid chromatography to tandem mass spectrometry (HILIC- MS/MS) [63]. Some enzymatic methods have undergone improved modifications to more accurately determine the amount of lactose and to reduce their interference with other lactose-free milk sugars [65]. Cryoscopy can also be used for this purpose, by measuring the decrease of the freezing point due to the enzymatic hydrolysis of lactose [56]. Biosensors are of interest for this purpose due to their high specificity and their ability to translate the detection of the analyte into an amperometric or potentiometric signal [64].

Conclusions

Lactose is an important component of milk in terms of nutritional and energy value, but for people suffering from lactose intolerance this component becomes problematic. Lactose intolerance is a globally widespread issue affecting a very high percent-age of the population, which greatly influences the habits of people with this condition. Lactose intolerance is not a disease but the symptoms are very acute and uncomfortable.

For these reasons, people suffering from lactose intolerance should have a special diet. In the context that dairy products cannot be excluded from the diet, being a category of foods indispensable in the diet of humans, even people with lactose intolerance, modern methods of obtaining lactose-free milk are implemented on an industrial scale. In the future, we expect to see many different new product launches in this rapidly expanding segment of the dairy industry.

The development of analytical methods based on innovative technologies is of major importance, they allow the correct quantification of lactose content in lactose-free milk, which allows the correct identification of the nutritional properties of lactose-free products and their correct labeling.

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