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SYSTEM OF PSYCHOLOGICAL SUPPORT FOR THE DEVELOPMENT OF REHABILITATION POTENTIAL OF POWER STRUCTURES SPECIALISTS

Abstract. The article identifies the main approaches to the psychological support of the process of development of rehabilitation potential of specialists of law enforcement agencies. Factors of development of rehabilitation potential of personality are characterized. The peculiarities of the systemic structure of mental phenomena and the concept of psychological support of the process of development of rehabilitation potential are considered. The need to implement a systematic approach based on empirical data, which includes research aimed at harmonizing the psychological state of law enforcement officers, is emphasized. Empirical research has revealed the peculiarities of the social functioning of specialists in law enforcement agencies with depressive disorders of neurotic origin. There are differences in the psychological well-being of professionals with depressive disorders of neurotic origin and

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people without mental disorders, namely: people without mental disorders are characterized by a predominance of interest in life, reflecting their interest in everyday life, enthusiasm for what is happening; in people with mental disorders, the indicators of “consistency in achieving goals” and “consistency between goals and their achievement” are such that indicate inadequate assessment and inability to use their own strength to achieve the goal.

Keywords: *rehabilitation potential, psychological state, specialists of law enforcement agencies, development, methodological approach, social support, psychological support.*

Introduction. According to many scientists, the social functioning of man is the mechanism that determines his social nature and allows him to be a person. But despite the fact that the individual is mainly considered as a social phenomenon, its formation is influenced by both psychogenic and exogenous-endogenous factors.

It is known that any disorder, even if it is not accompanied by destructive changes in brain activity, necessarily changes the psyche due to the emergence of new forms of response to the outside world. Such diseases include such a biochemical disorder as depression, which affects almost 300 million people worldwide.

Analysis of recent research and publications. According to many scientists, for a long time, the problem of health was not among the priority research interests of psychological science (Culbertson, 2010). But lately, it is considered not only in the medical field, but also in the psychological, because at the heart of the problem is the individual (Constand, 2014).

Thus, the psychological rehabilitation of a person suffering from depressive disorder is an urgent socio-psychological problem due to the growing prevalence and increase in the number of people with this pathology. According to the WHO, approximately 4-5 % of the world’s population suffers from depression, with the risk of developing lifelong depression reaching 10 % in men and up to 20 % in women (Coventry, 2015). According to WHO forecasts, by 2022, depression will rank first among diseases in the world, surpassing today’s leaders – infectious and cardiovascular diseases (Arshava, 2019). The medical and social consequences of depression are diverse and severe (Bengel, 2018). These include: high risk of suicide, impaired adaptive capacity, reduced professional status, family breakdown, disability, loss of social ties and reduced quality of life in general (Bennabi, 2015). The need for their comprehensive rehabilitation is due to the fact that mental illness leads to personality changes, social maladaptation and significantly reduces the ability of professionals to social functioning (Chung, 2018).

The conducted research in the field of rehabilitation of specialists reflects different opinions of scientists on this process (Burlakova, & Sheviakov, 2021). The history of rehabilitation shows a certain dynamics of views with a shift of emphasis from occupational rehabilitation to social and psychosocial rehabilitation (Bohlmeijer, 2011).

When discussing rehabilitation, researchers more often emphasize their personal characteristics, rehabilitation potential, give more importance to the forms and methods of the actual rehabilitation impact much less affect the socio-environmental environment (Caza, 2010). Meanwhile, this objective factor plays a significant role in rehabilitation and its importance cannot be ignored (Christian, 2011).

The purpose of our article is to study the peculiarities of social functioning and the leading factors of mental trauma in specialists of law enforcement agencies with depressive disorders of neurotic origin.

Formulation of the main material. 175 people took part in the study of the peculiarities of social functioning as components of psychological rehabilitation potential: the main group consisted of 91 specialists with depressive disorders of neurotic origin and 84 people without mental disorders were included in the control group.

Objectives of the study:

1. To conduct a theoretical and methodological analysis of approaches to the problem of rehabilitation of the individual in modern society.
2. To build a conceptual model of the phenomenon of rehabilitation in modern society.
3. To construct and test methods of psychological diagnostics of rehabilitation potential of personality.
4. Develop criteria for distinguishing between different forms of rehabilitation in modern society.
5. Investigate the psychological possibilities of developing constructive forms of rehabilitation potential of the individual.
6. To propose a socio-psychological program for the correction of destructive forms of rehabilitation of the individual in modern society and evaluate its effectiveness.

To achieve this goal, the following set of methods was used: questionnaire I. Karler, test “Life Satisfaction Index” in the adaptation of N. Panina and methods of mathematical data processing. The obtained data were processed using SPSS 15.0 and MS Excel v.8.0.3 programs.

To study the peculiarities of social functioning in various fields, specialists of law enforcement agencies with depressive disorders of neurotic origin used the questionnaire I. Karler, the results of which identified areas of greatest trauma and dissatisfaction (Figure 1). Thus, it was found that specialists with neurotic depression were dissatisfied with relationships with spouses (58.65 ± 13.47) %, with relatives (52.76 ± 11.63) %, and there was a lack of satisfaction with professional and social spheres. 44.68 ± 10.31 % and (42.62 ± 10.12) %, respectively). Among people without mental disorders, the level of dissatisfaction with the spheres of social functioning was below average: dissatisfaction with marital relations was 32.96 %, relations with relatives – 34.78 %, professional activity – 32.33 % and social sphere – 34.09 %.

Statistical analysis of the results showed that the overall level of dissatisfaction with social functioning was higher in patients with neurotic depression than in persons without mental illness ($p < 0.05$), which was manifested in greater dissatisfaction with relationships with relatives, spouses, occupational and social spheres. specialists with neurotic disorders compared to healthy ($t = 6,349, p < 0,0001$; $t = 6,341, p < 0,0001$; $t = 4,761, p < 0,0001$ and $t = 5,102, p < 0,001$, respectively).

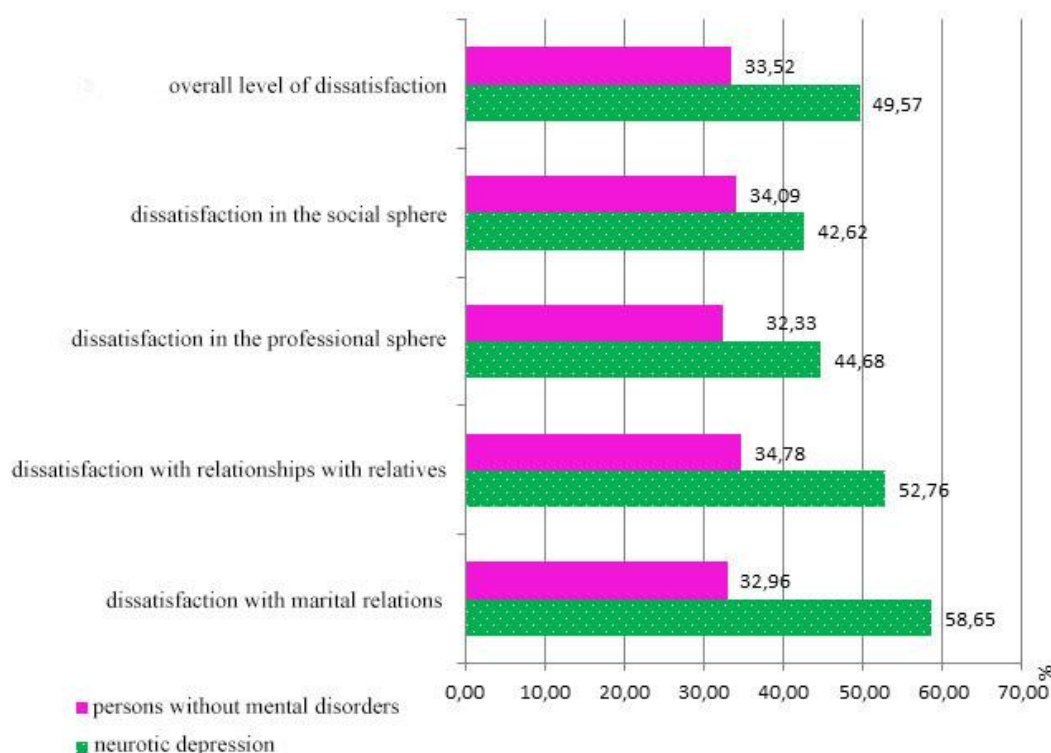


Figure 1 – Features of social functioning of specialists of law enforcement agencies with depressive disorders of neurotic origin

For a more detailed analysis, some data scales were analyzed to establish the specifics of the areas of mental trauma among specialists with depressive disorders of neurotic origin. Thus, in the field of marital relations in specialists with neurotic depression, the most pronounced area of mental trauma was defined as extramarital relations (3.67 ± 1.22 points), misunderstandings about the division of responsibilities (3.67 ± 1.17 points), lack of emotional intimacy between spouses (3.24 ± 1.47 points), different attitudes towards money (3.15 ± 1.29 points) and lack of mutual understanding with spouses (3.02 ± 1.07 points). In persons without mental pathology, there were slight difficulties in understanding the division of family responsibilities (2.35 ± 1.44 points), and dissatisfaction associated with excessive employment at work of one of the partners (2.32 ± 0.92 points).

A detailed analysis of the leading areas of mental trauma in relations with relatives revealed that specialists with neurotic depression had difficulties in relations with relatives living in the same area (4.25 ± 1.15 points), lack of satisfactory family and domestic situation (4.11 ± 1.22 points), misunderstanding with mother and mother-in-law (or mother-in-law) (3.97 ± 1.10 and 3.45 ± 0.92 points, respectively), the presence of illness of a family member or the need to care for him (2.69 ± 0.96 points), as well as problems with children (2.38 ± 0.64 points). Persons without mental disorders were characterized by difficulties in communicating with the mother of the spouse (2.13 ± 0.67 points), especially if they live in the same area (2.13 ± 0.84

points), and children (2.08 ± 0.71 points).

Peculiarities of mental trauma in the professional sphere of specialists with neurotic depression were associated with strained relationships with management and colleagues (3.25 ± 1.21 and 2.83 ± 1.12 points, respectively), with overload at work (3.89 ± 0.90 points), insufficient recognition (3.26 ± 0.71 points) and dissatisfaction with work that does not meet professional interests (3.45 ± 1.27 points). In persons without mental disorders, the areas of conflict were insufficient recognition (2.13 ± 1.26 points) and overwork (2.68 ± 1.07 points).

The definition of areas of mental trauma in the social sphere showed the predominance of frustration in politicians (4.78 ± 0.51 points), the contradiction between socio-political guidelines and reality (3.77 ± 1.23 points), differences in worldviews and political positions (2.67 ± 0.74 and 2.65 ± 0.87 points) in specialists with neurotic depression. Healthy people were also disappointed in politicians (3.89 ± 1.15 points).

Statistical analysis of the results allowed to identify the leading areas of mental trauma in specialists with depressive disorders of neurotic origin. Thus, it was found that specialists with neurotic depression were more pronounced and representative of the areas of mental trauma in marital relationships. Thus, specialists with neurotic depression were dominated by difficulties related to extramarital affairs and the division of responsibilities in the family ($t = 3,242$, $p < 0,001$ and $t = 2,461$, $p < 0,025$, respectively), as well as misunderstandings about the intentions to have children and distribution of money ($t = 2.253$, $p < 0.025$ and $t = 2.914$, $p < 0.005$, respectively) compared to healthy people. It was determined that specialists with neurotic depression experienced greater difficulties in mutual understanding with spouses ($t = 2,162$, $p < 0,05$) and lack of emotional intimacy ($t = 2,712$, $p < 0,025$) than healthy ones. It should be emphasized that sexual dysfunction ($p < 0.001$) and lack of understanding of leisure ($p < 0.01$) distinguished specialists with depressive disorders of neurotic origin from people without mental illness.

Probable differences were also found in the field of relations with relatives: dissatisfaction with the family situation ($p < 0.0001$), relations with the mother of the husband or wife ($p < 0.025$), with relatives living in the same area ($p < 0.001$) distinguished specialists with neurotic depression from healthy ones. Specialists with neurotic depression differed from those without mental disorders in the greater severity of difficulties in understanding with parents ($t = 4.122$, $p < 0.001$) and relatives of the wife ($t = 2.489$, $p < 0.025$).

Peculiarities of mental trauma in the professional sphere of specialists with neurotic depression differed from the control group by the predominance of tense relationships with management ($p < 0.0001$) and colleagues ($p < 0.05$), as well as difficulties associated with the mismatch of work to professional interests ($p < 0.001$).

In order to understand the characteristics of satisfaction with different areas of life of law enforcement officers, assess psychological comfort and socio-psychological adaptability, an analysis of components of psychological well-being and index of life satisfaction among professionals with neurotic depression. For this purpose, the test "Life Satisfaction Index" was used in the adaptation of N. Panina (table 1). As can be seen from Table 1, 49.45 % of specialists with neurotic depression had an average level of interest in life,

29.67 % – low and 20.88 % – high. That is, most professionals with neurotic depression have a moderate interest in life. Another situation was observed on the scale of “consistency in achieving the goal”: most professionals were defined as low (41.76 ± 3.54) %, 34.07 % – medium and 24.18 % – high level of expression of this indicator. That is, specialists with neurotic depression in most cases tended to take a passive life position in the face of failures and did not try to solve them.

Table 1
Features of the psychological well-being of specialists with depressive disorders of neurotic origin (according to the results of the test “LSI”)

Name of indicators	Level severity	Specialists with neurotic depression		DC	MI	P
		N = 91	N = 84			
Life satisfaction index (LSI)	high	20,88 ± 2,06	32,14 ± 3,19	1,87	0,11	0,331
	average	43,96 ± 3,66	47,62 ± 4,15	0,35	0,01	0,107
	low	35,16 ± 3,15	20,24 ± 2,18	-2,40	0,18	0,012
Interest in life	high	20,88 ± 2,06	38,10 ± 3,61	2,61	0,22	0,005
	average	49,45 ± 3,91	45,24 ± 4,03	-0,39	0,01	0,103
	low	29,67 ± 2,76	16,67 ± 1,83	-2,50	0,16	0,018
Consistency in achieving goals	high	24,18 ± 2,34	29,76 ± 3,01	0,90	0,03	0,096
	average	34,07 ± 3,07	46,43 ± 4,09	1,34	0,08	0,030
	low	41,76 ± 3,54	23,81 ± 2,50	-2,44	0,22	0,005
Consistency between goals and achievements	high	15,38 ± 1,57	34,52 ± 3,37	3,51	0,34	0,001
	average	35,16 ± 3,15	40,48 ± 3,76	0,61	0,02	0,095
	low	51,65 ± 3,99	25,00 ± 2,61	-3,15	0,42	0,000
Positive self-esteem	high	25,27 ± 2,43	23,81 ± 2,50	-0,26	0,00	0,136
	average	51,65 ± 3,99	61,90 ± 4,60	0,79	0,04	0,048
	low	23,08 ± 2,25	14,29 ± 1,59	-2,08	0,09	0,519
General mood background	high	20,88 ± 2,06	36,90 ± 3,53	2,47	0,20	0,008
	average	47,25 ± 3,81	45,24 ± 4,03	-0,19	0,00	0,116
	low	31,87 ± 2,92	17,86 ± 1,95	-2,52	0,18	0,014

There was also a predominance of people with a low level of coordination of goals and achievements in life (51.65 ± 3.99) %, which reflected the presence of intrapersonal conflicts among patients in this group. It should be noted that 25.27 % of professionals tended to evaluate themselves and their actions, 51.65 % – self-esteem was average and 23.08 % of professionals – low.

It was found that in the vast majority of specialists with neurotic depression, the general mood was satisfactory (47.25 ± 3.81) % or reduced (31.87 ± 2.92) %, as well as a general index of life satisfaction, which reflects the feeling of psychological comfort, 43.96 % of specialists were characterized

by average indicators, 35.16 % – low and only 20.88 % of specialists were satisfied with their own lives.

Individuals without mental disorders were characterized by a predominance of high and medium levels of interest in life (38.10 ± 3.61) % and (45.24 ± 4.03) %, respectively), which reflected their interest in everyday life, enthusiasm that happens. It was found that in people without mental disorders, the indicators of “consistency in achieving goals” and “consistency between goals and their achievement” were mostly average (46.43 ± 4.09) % and (40.48 ± 3.76) %, respectively), which indicated an adequate assessment and use of their own efforts to achieve the goal. It should also be noted that the vast majority of experts determined the average level of positive self-esteem (61.90 ± 4.60) %, which corresponded to adequate self-esteem. It was determined that in 36.90 % of people without mental disorders the general mood was characterized by high indicators, in 45.24 % – average and only in 17.86 % of people the mood was reduced. A similar trend was observed in the assessment of the overall index of life satisfaction and psychological comfort: 32.14 % of patients had a high level of satisfaction, 47.62 % – medium and 20.24 % – low.

A comparative analysis of psychological well-being among professionals with depressive disorders and people without mental disorders was conducted. Statistical analysis of the results revealed that the general index of life satisfaction of people with high levels of satisfaction was more among healthy people, and specialists with low levels – among patients with neurotic depression ($p < 0.01$, DC = 2.40, MI = 0, 18). Interest in life was higher among healthy people, who had more people with a high level of severity, compared with specialists with neurotic and endogenous depression ($p < 0.005$, DC = 2.61, MI = 0.22), among whom there were more people with low interest in life ($p < 0.01$, DC = 2.50, MI = 0.16). Determination and resilience in achieving goals also distinguished people without mental disorders, who had more people with a medium level ($p < 0.05$, DC = 1.34, MI = 0.08), from specialists with neurotic depression, who were characterized by passivity to achieve their own goals ($p < 0.005$, DC = 2.44, MI = 0.22). There were more people with a high level of self-confidence in overcoming failures among people without mental disorders compared with neurotic depression ($p < 0.001$, DC = 3.51, MI = 0.34), which was dominated by people with a low level of confidence. $p < 0.0001$, DC = 3.15, MI = 0.42). There were more people with adequate self-esteem among healthy people than among patients with neurotic depression ($p < 0.048$, DC = 0.79, MI = 0.04). It was also found that the general mood was high among people without mental illness ($p < 0.01$, DC = 2.47, MI = 0.20), while patients with neurotic depression were dominated by people with low mood ($p < 0.01$, DC = 2.52, MI = 0.18).

Thus, the assessment of the characteristics of psychological components of psychological rehabilitation potential of law enforcement officers with depressive disorders of neurotic origin revealed that social functioning, psychological well-being, features of interpersonal and family communication are important components that determine psychological rehabilitation.

The normative components of the psychological rehabilitation potential of people without mental disorders were identified, reflecting the

features of psychological well-being and can be considered as a standard / goal of rehabilitation intervention, which included: overall life satisfaction (47.62 %), interest in life (45.24 %), determination and resilience in achieving goals (46.43 % and 40.48 %), a high level of self-confidence (61.90 %).

Conclusions. As a result of the study, differentiated components of psychological rehabilitation deficit were identified, which reflected the specificity of depressive disorders of law enforcement officers, which included:

- expressed passive position in overcoming difficult situations;
- dissatisfaction with social functioning in the family, professional, social spheres;
- the presence of factors of mental trauma: in marital relationships (lack of mutual understanding and emotional intimacy, the presence of extramarital relationships, inconsistencies in the distribution of responsibilities, finances and intention to have children); in relations with relatives (dissatisfaction with the family situation, relations with the wife's parents and with relatives living in the same area); in the professional sphere (strained relations with management and colleagues, lack of recognition, inconsistency of work with professional interests); in the social sphere (differences in worldviews);
- Features of psychological well-being: low level of life satisfaction index, low mood background, low level of interest in life, lack of consistency between goals and achievements, low level of self-confidence and passive life position.

Thus, the obtained data should be taken into account when determining the psychological rehabilitation potential for specialists in law enforcement agencies with depressive disorders of neurotic origin and can be considered as targets for rehabilitation intervention in the creation of differentiated psychocorrection programs.

Conflict of Interest and other Ethics Statements.

The authors declare no conflict of interest.

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Вікторія КОРНІЄНКО, Олексій ШЕВЯКОВ, Шу ГАО ХАН

**СИСТЕМА ПСИХОЛОГІЧНОГО ПІДТРИМКИ РОЗВИТКУ
РЕАБІЛІТАЦІЙНОГО ПОТЕНЦІАЛУ ФАХІВЦІВ СИЛОВИХ СТРУКТУР**

Анотація. У статті визначено основні підходи до психологічного супроводу процесу розвитку реабілітаційного потенціалу фахівців правоохоронних органів. Охарактеризовано фактори розвитку реабілітаційного потенціалу особистості. Розглянуто особливості системної структури психічних явищ та концепції психологічного забезпечення процесу розвитку реабілітаційного потенціалу. Наголошується на необхідності впровадження системного підходу на основі емпіричних даних, що включає дослідження, спрямовані на гармонізацію психологічного стану працівників правоохоронних органів. Емпіричним дослідженням виявлено особливості соціального функціонування фахівців правоохоронних органів з депресивними розладами невротичного походження. Існують відмінності в психологічному самопочутті фахівців з депресивними розладами невротичного походження та осіб без психічних розладів, а саме: особи без психічних розладів характеризуються переважанням інтересу до життя, що відображає їх інтерес до повсякденного життя, захоплення тим, що є. відбувається; у людей з психічними розладами показники «послідовність у досягненні цілей» та «узгодженість цілей та їх досягнення» є такими, що свідчать про неадекватну оцінку та невміння використовувати власні сили для досягнення мети.

Ключові слова: реабілітаційний потенціал, психологічний стан, спеціалісти правоохоронних органів, розробка, методичний підхід, соціальний супровід, психологічний супровід

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OBJECT-SUBJECT-SUPERJECT: THE BEAUTY OF MIND

Abstract. To be interior in interactions or to be exterior in intraactions: how can we sense nature if we can't even sense ourselves as objects? In this case we can be considered as autistic people and we must be living in a closed universe without "Nature". We can express beauty of ourselves only if we can reflect to our mind, in itself. After this acting in process the World will be open for us.

Is it possible?

This mutual paradox is objectively measurable with a new test experiment. It represents the superject above the subject and object: the thing "Who" is able sense beauty as it surrounds us.

The spontaneity is at the same time constant and changing: if we are able to act out the Whiteheadian universality of the process whilst seeing ourselves from above then there is no contradiction between the happening and the experiencing of the process.

The Whiteheadian Philosophy could be a model of Ferenczian practice in interactive mutual Psychoanalysis, but the heterodox Psychoanalysis could provide practical Psychological background for Whiteheadian Theory.

Beauty is an acting in process of our mind opening from itself to ourselves, therefore the intraactive elements become interactive things. Ourselves reflected to our World is the "Eternal Other": The Psychological source of Aesthetics is the Psychology of Whiteheadian "superject".

Keywords: *Emotional autism, Cognitive autism, Interactive Deficit autism, Excited autism, Stereotypic autism*

Introduction. The Whiteheadian Philosophy could be a model of Ferenczian practice in interactive mutual psychoanalysis, but the heterodox psychoanalysis could provide practical psychological background for Whiteheadian theory – demonstrated by psychometry of autisms.

The Szondi testing, the most frequently applied purely psychoanalytical model, fulfils none of them: neither is the feedback of empiricism open in the test model, nor can empiricism become independent of the test model... (Cain... and Moses..., pp. 195-205).

The Rorschach testing lacks a specific analytical testing principle, it is much more of an analogous model, being analogous in its process (Mérei, 2002, pp. 24-27). Does the Rorschach test have a background domain (what the blots mean in themselves), or does the Szondi test have an empirically

confirmable domain from the specific testing? Neither does... Or rather, neither has an open variable possibility where projection reacts on theory.

This is the purpose for which I elaborate a new model:

How the Rorschach test's analogous freedom and the Szondi test's theoretical closedness can be compatible with individual testing?

1. If a projective test can solve the problem of open dissipation (Ervin László, pp.179-183), i.e., it can raise the problem from the interaction, but the problem raises the interaction – à la postmodern (Lyotard, 1993, p. 24) – then we get a new system psychology.

At the same time, such a construction will build up a personality psychology from the social relation, and the personality psychology will raise questions concerning the basic social psychological interactions, their intraactive internal backgrounds, and vice versa... Thus personality can be built up from the social act, as well as the other way round, while it is also possible to ask questions vice versa, in both ways, so the two categories are equipotential in our system.

To do so:

Because if I confront the test subject with a part of itself that can't be seen in the superject but is actually him/her, than the practice of the experience of the universal self will under-or overcome all the games between the subject and the superject.

A: it must fulfil the distinction and integration between the individual's inter/intraaction and personality structure... How can it do that?

B: we try to build up the Rorschach blot as the method of the background projection and its underlying general contents, first on a theoretical basis, later on an inductive basis, so the connection of the inductive basis and the theory can be continuously turned into each other, by which I mean the personality theory built up on the empirical basis of the social psychological act. The empirical basis has no social psychological basis and definitely no personality psychological basis any more: this will be the interactive personality testing.

That is, I include a broadly processed system of psychoanalytical nature in the "blot methodology", but the factors are not selected by means of the classic psychoanalysis, but a general interactive category scheme... and this is shaped further by means of falsification, i.e.:

I ask a question that carries a multiseomatic projectional basis in itself; while the basic type of the set of projective answers is unambiguously defined by the question, so the problem can be described. Here I explore e.g. lamenting in general, not differentiating between its types; instead I do so in a wider, empirical, non-projective way of raising the question. It will not be the "blot" itself, but the specifically described test content of the projective question.

A: I can empirically define the background content of the projection.

B: This set of empirical results itself will be the background theory of the projection.

C: I can compare it with the psychoanalytical background principles of projective questions.

D: Finally, I can prove or refute the psychoanalytical premise, while at the same time I test from the psychoanalytical theory (I can do so by my factors being completely open in terms of their meanings, in semantics...).

E: In terms of methodology, psychology theory, and philosophy of

science, it means the self-unity of empiricism and deduction, in its own organic process dynamics, in its self-controlled, spontaneous cycle...

The dynamic feature appears only as a category system, but as a new school, taking Neo-Freudianism only as a theoretical basis, while I elaborate a completely independent and new system, which can raise questions about inter- and intraaction (Bálint, 1979, p. 159; Klein, pp. 165-187).

Let's see the basic structure, replacing the blots with the theoretical structure, which can be confirmed empirically in the system below:

2. The construction principles of the test (The exact elaboration of the test categories is by Dr. Antal Bugán):

a) Relation categories

Now let's see how I can describe the internal feedbacks of the intra- and interaction with four dynamic categories.

A) Category:

INTRAMORPH

A previous experience induced by the interaction.

B) Category

INTERMORPH

A new experience in the interaction.

And there are two transitional categories between the inter- and intramorph:

C) Category

HOMOMORPH

The connection between the intramorph experience and the new, direct interaction: i.e., the previous experience appears in the interaction.

This is the dominance of the intramorph over the intermorph.

D) Category

HETEROMORPH

A given interactive experience created in a given process (this is what is always different, depending on the given process).

This is the dominance of the intermorph over the intramorph.

These are dynamics-based categories, but ones based on their distinct relations: relation categories of the "basic" interactive construction.

b) Internal dynamics of personality categories

Starting from an internal focus, we immediately get two categories: one is narcissism, the other is self-power.

Narcissism exists in itself, as it can only focus on its own closed intramorphness...

Its dichotomous counterpart is self-power. If it is intensive, the self can, for example, be interactively open about itself.

At the same time, these are dichotomies, rather than necessarily opposites. Their internal, inverse or complementary dynamics can be described from the empirical pattern.

A1: narcissism A2: self-power

But there is not only a dichotomous basic structure, but also a thematic semantic extension (from A1,2 follows B1,2, then C, D, E the same way).

At B, the next semantic level, I measure the object selection of A1,2:

B1: A philobat, who cannot bind an object in his intraactivity

B2: interactively projects himself onto the object: has transference

Let me show only two extremes: e.g. a lamenting patient and an empathetic analyst – it is a one-way analysis; but if both the patient and the analyst have transference, it is an opportunity for a complex mutual analysis (Cabré, 1998).

From the types, one can measure the process outcome of the analysis and indicate the empathetic results. In fact, it is worth paying attention e.g. to a possible “lamenting transference” on behalf of the patient, which is a blackmailing potential towards the analyst in case of a mutual analysis... Then it may be worth actually closing the analysis – which, I will venture, is often necessary, especially in mutual analysis.

It could be a way to continue Ferenczi’s oeuvre – maybe finding an answer to problems whose solutions Ferenczi couldn’t live to see. Maybe.

The conclusion of this test-game is that the subject playing with the real process – the superject – this is the natural human condition. The honest revelation of the superject however excludes the above position in our test questions.

The purpose of our article is to develop such a biologic psychiatric therapy.

Formulation of the main material. Thus the post-modern science gains a particular position: it realises the disappearance of the metaphysics in the new process eighty years after Whitehead. This recognition itself creates the metaphysics – the question goes and still the question remains. In our psychosocial game the superject is the psychiatry, but we are the subjects like autistic children in process: this is a socialpsychiatric “liberator” game for the really ill children in “reality”.

In our paper we would like to manifest the discourse of a Whiteheadian approach in practical clinical psychology, especially in testing interactive deficit situations e.g. autisms. We wish to dedicate our work for Whiteheadian interpretation of this narrative science.

It is common to address autistic disorder as “pervasive” or “comprehensive” ontogenetic disorders because they affect all areas of adolescent psychological development negatively. But as the expression itself suggests the truth is that we are not directly aware of the specific disorders. As it will turn out we cannot deal with autism as a complex disorder, we should rather use the term in plural i.e. autisms and autistic disorders (Nelson, 1995, pp. 72-73; Berkow, 1994, p. 2267-2268).

In my lecture I would like to point out the Asperger syndrome, because this autistic personality disorder has a so-called “acting out” between the process of “subject superior”, (in Whiteheadian philosophy it’s the “superject” (Whitehead, 1978)) and that of the “subject interior” which means the personality’s reality in the human psychological integrity. The superject dominates the person who has a schisis between its social and the own personal integrity. The individual psychological processes are under the superior reality. But the superior reality is the patient’s stronger psychoentity above the own personality. Reality versus psychological continuity – psychodynamic process contra social reality – metaphysical supremacy contra psychical process of the emotional interiorization: “out” inside of the own personality, but not “out” from personality. “Psychopathy, not psychosis” – as was said by Hans Asperger immigrant Austrian pediatrician. But we haven’t really got a psychoanalytical model for this syndrome, so we cannot make analytical

therapy for an analytical intellectual disorder form.

The Asperger syndrome (AS) has been in use as a diagnostic criterion since 1944; it was called then “Autistic psychopathy”. It only got the name Asperger syndrome referring to the first diagnostician from Lorna Wing psychiatrist and from her psychoanalyst colleagues in 1981. After all it was only involved in the official system of DSM-IV (DSM, 1999, pp. 41-69) as a unique syndrome in 1994 and it is still much debated etiologically and from other aspects.

It is interesting and its importance will be emphasized later that the male versus female occurrence rate is 6:1 (Wing, 1981, pp. 129-137), and it does not show symptoms in early childhood while other autisms do so. Its real occurrence is frequently met after the age of six. Even today it is considered by clinical child psychologists as a child psychopathy and no etiologic relation is seen between psychotic and neurodegenerative autisms. The fact that the IQ of children with AS is usually outstandingly high – often exceeds the value 140 – provides further support of this idea. We are going to point out that the classification spread in the ‘90s was totally wrong by saying that this is a mild form of autisms (DSM, 1999; Nelson, 2002) as opposed to the seriously retarded Kanner’s syndrome which was considered as a severe form of autism in this old classification. After 1994 we cannot even talk about such a division.

The zero-LORETA 3D EEG examination method (appliedneuroscience.com) could serve as a brand new evolutionist examination, which is much better in localization than any other common EEG-asymmetry examination. fMRI examination that is even better in localizing this function and the corpus callosum MRI on big population can gain great significance; we would like to integrate it by the FDG-PET-MRI examination.

The old and outdated misbelief which says that the childhood autism is a special relapse (shub) of adulthood schizophrenia is absurd and has never even been documented. It is quite obvious that the childhood psychotic autisms (low IQ – often under 75, perinatal neopathia possible) often show a different pathography compared to childhood schizophrenia (relatively high IQ, no perinatal neopathia (Nelson, 2002)). This can be well distinguished Psychopathologically and dynamically from autistic-psychopathy or from borderline syndromes evolving in late childhood (DSM, 1999) which are basically psychopathic with occasional psychotic relapses (shub) as described by modern etiologic models.

In all the DSM classifications traditionally Kanner Syndrome, which we have known since 1943, counts as the childhood psychotic autism (DSM, 1999). It is such a standard autism that its discoverer’s name is not even noted by the DSM-IV (DSM, 1999) but we will see that it is only a type of severe autistic disorder. Mental defectiveness is 100 % in this case, IQ is under 75 and the pervasive disorder can be recognized before the age of three in communication, social behavior and in flexible thinking. Patients often become echolalic, are incapable of communication even on motor level and the stereotypic behavior in psychomotorics. They cannot recognize the personal pronouns and possessive pronouns or invariably repeat them; meaningless, ritual behavior patterns are often. The syndrome’s incidence 3-4/10000 and it is increasing, but the most interesting fact is that the girl : boy rate is 3-4:1 (Nelson, 2002). Unambiguous fallback can be recognized in the above mentioned areas compared to healthy coevals before the age of three while they

produce the abovementioned pathologic symptoms. This fact will be of greater importance later in our methodic.

Unambiguous neurodegenerative reasons for the Kanner Syndrome are unknown (Nelson, 2002).

On the other hand the Rett Syndrome which is recently commonly classified as a type of autistic disorder has an unknown etiology (Nelson, 2002, pp. 1528-1529) but it is unambiguously a neurodegenerative disease, it only appears with girls and its incidence is 1:15000 (Nelson, 2002). Growth seems to be normal until the age of one then the speech and motor skills show a fallback and microcephalia appears. This can cause brain-stem ataxia and minor hand tremor in its early state. Most patients suffering the syndrome produce sigh like breathing with intermitting apneic periods which are accompanied by cyanosis. The stereotypical hand fumbling is very common the spontaneous and aimed hand movement disappears. Interestingly this symptom does not evolve before the age of 2 or 3. Strong epileptiform generalized tonal-clonal seizures emerge at most of the patients in the early period. These can be well treated by antiepileptic drugs though dystrophy and defective weight gain can emerge. The autistic behavior is general which proves to be curious because the initial severe neurologic pathography, which decays, is accompanied by a permanent psychiatric pathography (Nelson, 2002).

Today we know that those children who suffer Kanner – or Rett syndromes become mentally retarded people with defective social skills in their adulthood. We also know that development therapies in childhood or adolescence may evoke improvement; thus the lack of such therapies or their application make a big difference in patients lives. Today the progression cannot be valuably changed by drug application (this will be detailed later on) but the patients do not develop schizoid personality structures their autism become standardized (Nelson, 2002).

It is quite curious to decide what to consider the Rett Syndrome on the basis of classification. The Nelson Textbook of Pediatrics classifies it as “Neurodegenerative disease of various reason” (Nelson, 2002) while DSM-IV classifies it as autism or autistic pathography (DSM, 1999). Clinical child psychologists have only started to discover this syndrome in their field.

If we typically look at the common or at least psycho-dynamically analogous symptoms, which make it possible at all to consider autisms here, then we can create different dynamic categories:

A: Emotional autism

With the Asperger Syndrome this is shown in the psychopathic scission between systematicness and unsystematicness i.e. a typically convergence dominant emotional function phenomenon.

All this is severely diverged with the Kanner Syndrome i.e. it rejects every convergent function i.e. echolalia, stereotypic psycho motor, defective use of personal pronouns.

This pathological divergence appears as neurodegeneration with the Rett Syndrome patients; this is interesting also because, we do not know what it was before.

B: Cognitive autism

It is obvious here that the cause is convergence predominance with

Asperger patients while Kanner and Rett patients functionally incapable of basic convergences like complex speech, aimed communication motivated movement etc.

C: Interactive Deficit autism

This is obviously A&B

D: Excited autism

It is implied that with Asperger patients the psychopathic emotional range of systematicness – unsystematicness scission can be observed which can later manifest in various acting-out behavior. It must not be confused with adulthood psychopathia not even in methodical sense. It is more common here that the psychopathic excitation is covered by the emotional bizarreness of the extreme intellect.

With the Kanner Syndrome the excitation can be considered as a negative stereotypic psychotic aggression seizure, though we know very little about its etiology because the psychotic status of retardation as opposed to the numerous life story accounts recorded with aspergeroid patients (<http://livewithit.blog.hu>).

Excitation with the Rett Syndrome is neurologically initiated which becomes a chronic psychotic autistic standard status; see above. The emotional and intellectual excitation of both the Kanner and the Rett syndromes show a very divergent feature, in certain cases the convergent intellectual functions cannot even be recognized.

E: Stereotypic autism

See: C&D

Our researchers' discovery

We have said that this is a convergence-divergence balance failure, dominantly “boy-brain breakage” with the Asperger Syndrome, and we have proved psycho-dynamically that the Kanner and even more the Rett syndromes are divergent “girl-brain breakage” or at least they show such pathological brain hemisphere dominance. This is why we suggest applying the above mentioned diagnostic imaging and electrophysiological examinations here as well; results are predicted to be analogous but adverse in meaning. If possible it is worth to expand EQ and SQ tests along with the IQ test and to apply complex convergence-divergence tests, though there seems to be not much chance for this except for with AS patients; not counting the standardized, approved and generally applied IQ tests.

From genetic aspect we know that autisms and autistic syndromes often overlap with the so called “X-Fragile syndrome” (Martin-Bell Syndrome) (Nelson, 2002; <http://www.medterms.com>) the genetic etiology of which we do not know. This scientific case is even more absurd because we cannot undoubtedly identify it with autistic syndromes. We only know that there is such a parallelism, but this is a blurry field both in genetics and child psychiatry, more to that we do not know the exact dynamics of these syndromes in psychology. Neither do we know the genetic origin of premutational X-fragile cases (we have 18 family members for research reasons) or their etiology. We have worked out a specific examination method in our human research plan which can unambiguously falsify the above mentioned phenomena, problems.

We basically know that X chromosome disorders can cause hypothalamus

laesio and since the time of modern diagnostic imaging we also aware that severe hypothalamus laesio (www.gyogyinfok.hu/magyar) and corpus callosum laesio (Bibby, 2008) can be identified with many childhood autism patients. We deal with the relation of these in another chapter.

We can talk about a comprehensive autism research along these complex analogy systems from genetics to psychology. Thought these are scientific analogies within which we can build up a complex research by the above mentioned etiologic, progressive diversification of disorder differences within pervasiveness; with the unique and independent discussion of each specificity.

I do not mention the contemporary pharmacology and our new opportunities since this will be topic of the rest of this tender material. Up to the present day the most accepted and most effective therapy is the cooperation of child psychiatry, clinical child psychology and the special education. There is not even a fully compensating therapy in existence as there is one with adulthood psychosis or psychopathy. Our test can help in this case.

The aim of this article and research is to develop such a biologic psychiatric therapy.

It is clear that complex developing therapy cannot be neglected later either applied our test probe.

Existing with autism is an existence without being sensible to nature. We are able to live without the concept of nature (Whitehead, 1920, pp. 14-19), but only in an outside nature of “our” superject: in nature.

As we have demonstrated the nature of subject: autism appears to be the subject’s superjective object.

Repeated my Thesis: To be interior in interactions or to be exterior in intraactions: how can we sense nature if we can’t even sense ourselves as objects? In this case we can be considered as autistic people and we must be living in a closed universe without “Nature”. We can express beauty of ourselves only if we can reflect to our mind, in itself. After this acting in process the World will be open for us.

It is possible.

Conclusions. Beauty is an acting in process of our mind opening from itself to ourselves, therefore the intraactive elements become interactive things. Ourselves reflected to our World is the “Eternal Other”: The Psychological source of Aesthetics is the Psychology of Whiteheadian “superject”.

We have analysed a Psychological model of “superject phenomenon”. The Psychology of Us and Others as Beauty of Mind, Mind of Beauty. A way of Psychologically based Aesthetics.

Conflict of Interest and other Ethics Statements

The author declare no conflict of interest.

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Лехель САЙМОН

ОБ'ЄКТ-СУБ'ЄКТ-СУПЕРПРОЕКТ: КРАСА РОЗУМУ

Анотація. Бути внутрішньо орієнтованим у взаємодії або бути зовнішньо орієнтованим у взаємодіях: як ми можемо відчутти природу, якщо ми навіть не можемо відчувати себе як об'єкти? У цьому випадку нас можна вважати аутичними людьми, і ми повинні жити в закритому всесвіті без «Природи». Ми можемо висловити красу самих себе, лише якщо зможемо відображати її у своєму розумі, в собі. Після цього Світ для нас відкриється. Це можливо? Цей взаємний парадокс можна об'єктивно виміряти за допомогою нового тестового експерименту. Він представляє надоб'єкт над суб'єктом і об'єктом: справа в тому, «Хто» здатен відчувати красу, яка нас оточує. Спонтанність водночас є постійною і змінюваною: якщо ми можемо відтворити вайтхедівську універсальність процесу, бачачи себе

згори, тоді немає протиріччя між тим, що відбувається, і переживанням процесу. Філософія Уайтхеда могла б бути моделлю практики Ференца в інтерактивному взаємному психоаналізі, але гетеродоксальний психоаналіз міг би забезпечити практичне психологічне підґрунтя для теорії Уайтхеда. Краса – це дія в процесі відкриття нашого розуму від себе до нас самих, тому інтраактивні елементи стають інтерактивними речами. Ми самі, відображені в нашому Світі, є “Вічним Іншим”: Психологічне джерело естетики – це психологія Вайтхедівського “надоб’єкта”.

Ключові слова: емоційний аутизм, когнітивний аутизм, інтерактивний дефіцитний аутизм, збуджений аутизм, стереотипний аутизм

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SEARCH FOR BEAUTY AND VIVID VALUES IN THE EVERYDAY: VIRGINIA WOOLF AND PROCESS AESTHETICS

Abstract. This article explores the parallels between Virginia Woolf’s aestheticized account of reality in her fiction and Alfred North Whitehead’s process aesthetics that emphasizes the fact that any experience may be classified as aesthetic enjoyment of vivid values. While scholars often associate Woolf with the high modernist aesthetics and formalism, the writer was fascinated by the everyday and the lure of common objects that generate a strong emotional response on the part of the perceiving subject. Especially in her early short stories “The Mark on the Wall” and “Solid Objects”, the main characters manifest a childlike compulsion to explore surrounding objects and the need to penetrate “deeper, away from the surface, with its hard separate facts”. Similarly, in his philosophical system, Whitehead wants to go beyond what we already know about the external world and explore the inner organic relations behind the appearance of a thing, or in Woolf’s words the “pattern behind the cotton wool” of the everyday. In *Science and the Modern World* Whitehead argues that the problem of the modern civilization is the lack of art, experience, and value in the mundane and that it is the artist who should cultivate “the habits of aesthetic apprehension.” Woolf likewise rejects the dichotomy between art in its narrow sense and its broad sense, conceived as the aesthetic enjoyment of reality, and claims in her famous essay “Modern Fiction” that the subject of modern art can be anything and that fiction should translate artistically the impressions of “an ordinary mind on an ordinary day”.

Keywords: Woolf, Whitehead, process aesthetics, ordinary experience, art

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Introduction. Virginia Woolf is notoriously known as a “high modernist” author who revolutionized the genre of the novel and short fiction in the first three decades of the 20th century. She is also recognized for her feminist ideas and criticism of social injustice. However, she is usually less associated with philosophical reasoning and purely metaphysical enquiries in some of her most celebrated works. Fortunately, this debt has been partly repaid by scholars who connect her either with the philosophy of her contemporaries – Bertrand Russell and G. E. Moore – or poststructuralist philosophers such as Gilles Deleuze and Félix Guattari. Leslie Stephen, Virginia Woolf’s father, who was a philosopher himself, encouraged his daughter’s passion for reading, including the works of great philosophers. While studying at Cambridge University, Woolf’s brother Thoby Stephen joined the ‘Cambridge Apostles,’ the famous intellectual society, and became friends with Bertrand Russell and G.E. Moore who created the philosophical core of the iconic Bloomsbury Group. As we know from her diaries and autobiographical works, Virginia Woolf enjoyed the intellectual meetings of the group and participated in their discussions on topics such as art, aesthetics, ethics and, most importantly, philosophy. Although Woolf claimed that she preferred attending a concert or a play to Russell’s public lectures, it has been demonstrated in multiple scholarly monographs that she must have been very well acquainted with his thought (Ann Banfield, 2000). In her review of Lawrence Pearsall Jacks’s works entitled “Philosophy in Fiction”, Woolf reveals her interest in the inclusion of philosophical enquiry in literature and she admits that Jacks articulates “a different method of approach and a different direction” and becomes “something besides a novelist,” which is something Woolf wishes other novelists “shared with him” (Woolf, 1987, p. 209). Therefore, it is not surprising that Woolf’s family background and her own interest in philosophy penetrate her fiction, which becomes “philosophically literary” (Benjamin Hagen, 2018, p. 139). In her early short stories “The Mark on the Wall” and “Solid Objects” Woolf focuses on our perception of material objects whose seeming solidity and internal design fascinates the author: “I want to sink deeper and deeper, away from the surface, with its hard separate facts” (Woolf, 1989, p. 85). Furthermore, these stories demonstrate her interest in everyday objects which are usually considered only a part of the setting and not something the characters can appreciate aesthetically. In her well-known novel *To the Lighthouse*, inanimate objects represent a significant element, which is also manifested in Mr Ramsay’s philosophical enquiry into “the subject and the object and the nature of reality” (Woolf, 2000, p. 28). Similarly, in her most experimental novel *The Waves*, one of the characters doubts “the fixity of tables”, touches a table and asks: “Are you hard?” (Woolf, 2000, p. 162).

Analysis of recent research and publications. Apart from this enquiry into the nature of material reality, Woolf’s philosophy is also very closely related to aesthetics and her ideas about the nature of art, particularly the art of fiction. In her essay “Modern Fiction” she urges writers to transcribe the flow of everyday experience, “an incessant shower of innumerable atoms” that springs from the external and affects our minds. Furthermore, she admits that “everything is the proper stuff of fiction” and “no perception comes amiss” in writing (Woolf, 2009). This entails that for Woolf, an accomplished work of art captures our emotion induced by our perception of ordinary reality which may be regarded as “aesthetic.” Aestheticized view of reality is also a subject of Woolf’s

late oeuvre where the author turns away from the analysis of perception and external reality and explores intersubjectivity and collective mode of being/becoming. In her autobiographical essay “A Sketch of the Past,” she likens the interconnection of people and community to a work of art composed of interrelated elements: “[...] we – I mean all human beings – are connected with this; that the whole world is a work of art” (Woolf, 1985, p. 72). Similarly, In *Between the Acts* she devises a community that is described as a “discordant harmony”, which hints at the idea that for Woolf beautiful harmony is not achieved by the sameness of its parts but by the introduction of contrasts that are harmonized.

Alfred North Whitehead, Woolf’s contemporary and Bertrand Russell’s teacher and collaborator, is well known for his process-oriented thought and for propagating a speculative cosmology in his opus magnum *Process and Reality*. Although there is no clear evidence that Woolf ever read Whitehead’s works or discussed philosophical ideas with him, it is known that she met the Whiteheads at the 1912 ball celebrating the closure of the Second Post-Impressionist Exhibition, and probably also in Ottoline Morell’s house, where Russell and Whitehead were frequent visitors. Taken this into consideration, it is even more surprising that the writer and the philosopher examine very similar questions in their oeuvres. However, the parallels between their ideas may spring from the “zeitgeist” and their personal urge to react to the most pertinent questions of their time — materialistic outlook of the then science, neglect of the intrinsic value of the environment, and the false conception of reality consisting of separate, unrelated individuals or pieces of inert matter.

Like Woolf, Whitehead explores the process of perception in his philosophical works, examines the relation between subject and object and introduces his own concept of nature. Interestingly, his early work *The Concept of Nature*, which outlines a theory of materiality based on interrelated events, was published in 1920 – the same year as Woolf’s short story “Solid Objects,” where the writer questions the traditional concept of a thing and assigns agency to lifeless and inert material. Whitehead fully develops his ontology in *Process and Reality* where he argues that an actual occasion, defined as “a drop of experience” (Whitehead, 1978, p. 18) and not as a material particle, represents the building block of reality. This reveals that experience has a special status in his philosophical system and that each actual occasion can experience, or in Whitehead’s terms “prehend”, and react to its environment. Moreover, Whitehead emphasizes that any experience may be aesthetic because beauty is realized in each actual occasion (Whitehead, 1967a, p. 255), which demonstrates that ontology and aesthetics are very closely related in his philosophy and that aesthetics and aesthetic experience are, perhaps, even superior to Whitehead’s ontological categories (Dadejick et al., 2021). Similarly to Woolf, the philosopher conceives of reality as a work of art based on harmonic interaction of its parts since “the teleology of the Universe is directed towards the production of Beauty” (Whitehead, 1967a, p. 265). In *Science and the Modern World*, Whitehead laments that the appreciation of the intrinsic aesthetic nature of reality was weakened by the modern scientific progress and its inclination to materialism. He suggests that this decline of aesthetic experience of the everyday may be remedied by art which should cultivate our ability of “aesthetic apprehension” (Whitehead, 1967b, p. 199). Therefore, it is not surprising that

Whitehead often takes inspiration in art and discusses it in his philosophical works. In his opinion, both art and philosophy disclose hidden aspects of reality and penetrate beyond the phenomenological (Dadejik et al., 2021). Whitehead claims that art imposes “a pattern on experience, and our aesthetic enjoyment is recognition of the pattern” (Whitehead and Price, 2001, p. 225), which, interestingly, reminds us of Woolf for whom the word “pattern”, in respect to the seizure of reality in fiction, also represents an important issue.

As far as literature is concerned, Whitehead argues that it is the writing of a given time that reveals “the concrete outlook of humanity” and “the inward thoughts of a generation” (Whitehead, 1967b, pp. 75-76). He demonstrates this on the example of Romantic poets who not only embodied his idea of artists transmitting their experience of the immediate world (Whitehead, 1958, p. 12) but also rebelled against the mechanistic conception of nature that was dominant in their time. They emphasized the need to perceive nature as a living organism, a system of “entwined prehensive unities” (Whitehead, 1967b, p. 84), which is a source of wonder and mystery. Therefore, for Whitehead the poet penetrates beneath the appearance of things, foregrounds their aesthetic aspects, and reconstructs “the aesthetic value” (Whitehead, 1967b, p. 199) of our physical environment.

Although the parallels between Woolf’s and Whitehead’s thought are numerous and range from ontology, epistemology, education, environmentalism and pacifism to ethics, this article aims to examine the similarities between their emphasis on experience as the basis of their literary and philosophical systems, and aesthetic experience of the everyday, which represents not only an essential subject of art but also a foundation of philosophy that does not indulge in abstractions but remains as close to the concrete reality as possible. This is the subject of the following section of this article, while the subsequent section discusses Woolf as the example of Whitehead’s longed-for author who translates their experience of the immediate environment into fiction. This is examined mainly in Woolf’s short stories “The Mark on the Wall” and “Solid Objects”, where the main characters search for “vivid values” which lie beneath the surface of the material world.

(Aesthetic) Experience in Whitehead’s Philosophy and Woolf’s Writing

Although Whitehead points out in his book *Symbolism: Its Meaning and Effect* that “the word experience is one of the most deceitful in philosophy” (Whitehead, 1958, p. 16), his whole philosophical system circulates around this notion. In *Science and the Modern World*, he argues that while all experience might seem “dim and fragmentary”, it is valuable as it “sounds the utmost depths of reality”. At that time the physical world was thought to be created out of “senseless, valueless, purposeless” (Whitehead, 1967b, p. 17) matter, which provoked the philosopher to devise an ontological system that would also include experience and mental aspects of being. In *Process and Reality* Whitehead elevates experience to the status of the building block of reality and replaces atoms with his concept of actual entities defined as “drops of experience, complex and interdependent” (Whitehead, 1978, p.18). Moreover, each actual occasion is not only composed of experience, but it is also capable of elementary experience of its immediate environment. Whitehead calls this capacity “prehension”, defining it as an actual entity’s emotional reaction to other aspects of reality that are integrated into its identity during the process of

conrescence, or in other words becoming. Whitehead claims that an actual entity is a “subject of the feeling” because it has “concern for the object” (Whitehead, 1967a, p. 176). This means that prehension may be approximated to perception – the process where a subject experiences an object and reacts to it. However, any object integrated into an actual entity is also a prehending subject, which entails that for Whitehead the subject and the object represent “relative terms” (Whitehead, 1967a, p. 176) as the two are mutually prehending entities. Therefore, each constituent of reality is a subject capable of some proto-mental experience of its environment, which affiliates the philosopher with panpsychism – the belief that everything has some proto-psychic properties (Nagel, 2008, p. 181). This also suggests that Whitehead’s concept of prehension is very broad and includes also non-living entities to which conscious experience, or “what-is-it-likeness” (Nagel, 1974) to be that entity, has never been attributed. Human consciousness thus represents only a developed form of this perception, “a crown of experience” (Whitehead, 1978, p. 267) which “flickers” upon the whole flow of complex experience and illuminates only a part of reality.

Whitehead elaborates on the importance of experience as the basis of our reality while interrelating his ontological concept with aesthetics. In *Adventures of Ideas*, he emphasizes the aesthetic rather than the experiential nature of an actual occasion. While discussing beauty, he argues that it is exemplified in each actual occasion (Whitehead, 1967a, p. 252) as it harmonizes contrasting data. Consequently, it may be claimed that each constituent of reality is intrinsically beautiful, which implies that perception of this entity is likewise aesthetic. Therefore, Whitehead’s concept of aesthetic experience is much broader than the mere experience of a work of art and it is an inseparable part of his “ontological and ontically creative principle” (Dadejick et al., 2021, p. 66) which might be reductively called ontoaesthetics. In *Science and the Modern World* Whitehead elaborates on the fact that any occasion of experience is potentially beautiful, because it includes variously arranged elements, and he claims that the experience of a complex configuration of an actual occasion also entails the experience of vivid values springing from the ontological relationality: “Everything has some value for itself, for others, and for the whole” (Whitehead, 1938, p. 111). Therefore, while perceiving the world around us, we are experiencing these vivid values, or intensities, and their combinations.

Analogously to the broad sense of aesthetic experience in Whitehead’s philosophy, the term “art” also acquires much broader meaning than traditionally attributed to it there. In *Modes of Thought* the philosopher talks about the general sense of “art” and he defines it as “any selection by which the concrete facts are so arranged as to elicit attention to particular values which are realisable by them” (Whitehead, 1938, p. 200). Then he adds that “the habit of art is the habit of enjoying vivid values”, which can be applied not only to Art in its narrow sense but also art of experiencing the reality around us. Whitehead gives an example of a factory that represents an organism depending on values of its parts whilst the most valuable part of this experience is “apprehending” the “organism in its completeness” (Whitehead, 1938, p. 200). As a result, Art in the narrow sense, which also combines several factors into a unified whole, for example a Post-Impressionist painting where lines and colours are “combined in a particular way” to create “forms or relations of forms” (Whitehead, 1938, p. 200), is just an exemplification of the processes and organic wholes that can be

found in nature: “The work of Art is a fragment of nature with the mark on it of a finite creative effort, so that it stands alone, an individual thing detailed from the vague infinity of its background” (Whitehead, 1938, p. 270). To conclude, this demonstrates that aesthetic experience is the core of Whitehead’s philosophical system and that the philosopher does not draw a distinct line between the art of experiencing the surrounding environment and a work of art. There is continuity between the two conceptions of art as the one enhances the other, particularly Art is meant to heighten our sensitivity to the aesthetic values in nature around us. The second part of this section suggests that Woolf also foregrounds experience in her writing, bridges the gap between our perception of reality and perception of works of art and aims to draw her readers’ attention to the aesthetic aspects of everyday experience.

Woolf’s father Leslie Stephen was also aware of the importance of experience that was often entirely left out from the debates on the nature of reality. In his essay “What is Materialism?” he emphasizes that our feelings and emotions are “as real as the stone” (Stephen, 1903, p. 132) and “if living being arose from inanimate matter” (Stephen, 1903, p. 145), this substance must have other than purely physical or material properties. Woolf elaborates on her father’s anti-materialist thought in her fiction where she often discards the solidity of things, the “fixity of tables” (Woolf, 2000, p. 162), and argues that the material and mental aspects of reality are equally important. This is aptly demonstrated in her attempt to reconcile the contrast between “the granite and the rainbow” (Woolf, 2009a, p. 95) in her essay “The New Biography” or in ‘On Being Ill’ where she claims that the body and the mind must complement each other like “the sheath of a knife or the pod of a pea” (Woolf, 2009b, p. 101). In her essay “Modern Fiction” Woolf introduces her ideas about the newly-emerging writing style and criticizes the Edwardians, writers such as John Galsworthy, Arnold Bennett and H. G. Wells, for being too materialist and for neglecting the interior life and subjective experience of their fictional characters. She argues that “they are concerned not with the spirit but with the body” (Woolf, 2009c, p. 7) and that they write about “unimportant things” which are in no way connected with the characters described and hence do not excite any emotional response on the part of the reader.

Conversely, Woolf highlights the importance of one’s experience of everyday reality and she is fascinated by the numberless impulses that one’s mind collects: “Examine for a moment an ordinary mind on an ordinary day. The mind receives a myriad impressions – trivial, fantastic, evanescent, or engraved with the sharpness of steel. From all sides they come, an incessant shower of innumerable atoms [...]” (Woolf, 2009c, p. 9). The fact that Woolf compares experience with material particles, atoms, indicates that she also considers it to be the foundations of reality. Later in the essay, Woolf suggests that an author should focus on the internal life and experience of characters, transcribe the workings of their mind and omit the material excess that tells us nothing about our experience and perception: “Let us record the atoms as they fall upon the mind in order in which they fall, let us trace the pattern, however disconnected and incoherent in appearance, which each sight scores upon the consciousness” (Woolf, 2009c, p. 9). This quotations demonstrates that Woolf describes consciousness in analogous way to Whitehead who defines it as “nothing else than the succession of [my] occasions of experience, extending from birth to the

present moment” (Whitehead, 1938, p. 163). Furthermore, Woolf’s hint at the incoherent and contrasting pattern of separate experiences, which our consciousness as well as writers in their fiction need to synthesize into one whole, is strikingly similar to Whitehead’s definition of aesthetic experience as the experience of “contrasts under identity” (Whitehead, 1978, p. 280). Like Whitehead, who suggests that consciousness “flickers” from a much broader complex of experience, in “Modern Fiction” Woolf also compares conscious experience with “flickerings of that innermost flame which flashes its message through the brain” (Woolf, 2009c, p. 10).

Concerning his thoughts on consciousness, Whitehead adds that each occasion of experience that constitutes our present experience is connected to the experienced world conceived “as another relatum” (Whitehead, 1938, p. 163), which may be approximated to Woolf’s idea that the impressions of the external world are engraved into our mind and therefore inseparably interconnected. Interestingly, Woolf explores the relation between a conscious subject and the object in most of her fiction, for example in *To the Lighthouse* where Mr Ramsay studies the question of “the subject and the object and the nature of reality” (Woolf, 2000, p. 28) and Mrs Ramsay and Lily have the ability to renounce their subject position, merge with their physical environment and become the object they observe (Woolf, 2000, p. 70). The following section of this article will focus on these aspects in Woolf’s short stories “The Mark on the Wall” and “Solid Objects”.

The aforementioned quotations from Woolf’s essay “Modern Fiction” entail that the transmission of emotions and transcription of the everyday experience into fiction is of crucial importance for the author and that the external world represents an important source of her artistic inspiration. In her autobiographical essay “A Sketch of the Past” Woolf describes her intensive moments of experience, moments of being, as well as her shock receiving capacity, which often renders ordinary experience extraordinary. Woolf mentions three important moments of rapture from her childhood, one related to her brother beating her, the second one associated with passing a tree on which a family friend hanged himself and the third one is connected to a perception of a flower. While the two first moments resulted in the feelings of despair and powerlessness, the last one, on the contrary, evoked the emotion of satisfaction. While observing the flower, Woolf experienced a moment of wholeness and discovery. She was astounded by the idea that the flower is inseparable from the soil, by the beauty of this complex organism and its relations with the environment: “I was looking at the flower bed by the front door; “That is the whole,” I said. I was looking at a plant with a spread of leaves; and it seemed suddenly plain that the flower itself was a part of the earth; that a ring enclosed what was the flower; and that was the real flower; part earth; part flower” (Woolf, 1985, p. 71). Several lines below, Woolf writes that this aesthetic and revelatory moment is something she wants to cherish and return to repeatedly: “I felt that I had put away in my mind something that I should go back [to], to turn over and explore” (Woolf, 1985, p. 71). Therefore, this moment of observation and epiphany about the aesthetic and relational nature of the world around us represents Woolf’s own variation of Whitehead’s aesthetic experience of vivid values hidden in the ordinary. Moreover, her experience of a flower is strikingly similar to John Dewey’s example of continuity between the experience of art and

non-artistic aspects of reality (Dadejick et al., 2021, p. 77). While arguing that works of art arise from ordinary experience, Dewey points out that flowers may be “enjoyed without knowing about the interactions of soil, air, moisture, and seeds of which they are the result”, but if we want to “understand” them, we need to take into account the relations and interaction between these elements (Dewey, 1958, p. 12). Dewey adds that aesthetic understanding and enjoyment springs directly from these relations that make “an ordinary experience complete” (Dewey, 1958, p. 12), which is analogous to Woolf’s own discovery and appreciation of internal interactions between the flower, the ground and the air. Later in “A Sketch of the Past” Woolf claims that her pleasure of writing originates from her search for “what belongs to what” and that she “welcomes” these experiential shocks coming from “the cotton wool of daily life” (Woolf, 1985, p. 72).

At the end of “Modern Fiction” Woolf emphasizes that there is no proper stuff, meaning “high” stuff, of fiction and suggests that “everything is the proper stuff of fiction, every feeling, every thought; every quality of brain and spirit” (Woolf c, 2009c, p. 12). She develops the same thought in her essay “Poetry, Fiction and the Future”, complaining that writers often neglect the fact that “a large and important part of life consists in our emotions toward such things as roses and nightingales, the dawn, the sunset” (Woolf d, 2009, p. 80). This intimates that Woolf was also reluctant to draw a distinct line between mundane experience and the experience of a work of art as both are based on strong emotional response, deeper realization, and aesthetic appreciation. Sim Lorraine argues that while Woolf pays attention to the everyday and the ordinary, she moves “beyond customary perceptions and formulations of it in order to realize its richness” (Sim & Woolf, 2010, p. 13). Woolf demonstrates this on her characters, especially female characters, who are often endowed with hypersensitivity to their environment and often respond emotionally, or even ecstatically, to it.

In *To the Lighthouse*, Lily, the painter, keeps “a feeler on her surroundings”, she is aware of the minute movements of mass around her and she attempts to be “on a level with ordinary experience, to feel simply that’s a chair, that’s a table, and yet at the same time, It’s a miracle, it’s an ecstasy” (Woolf, 2000, p. 218). Similarly, Mrs Ramsay is described as “being past everything, through everything, out of everything” (Woolf, 2000, p. 91) and while sitting alone and contemplating the scenery, she often “loses her personality” and “attaches herself” to the things observed (Woolf, 2000, p. 70). Therefore, both Lily and Mrs Ramsay undergo “the reduction of self” (Banfield, 2000, p. 287) and enter the perception, or prehension, of their environment on more “equal terms” (Whitehead, 1967b, p. 89) with the objective world. On the contrary, Mr Ramsay does not abound with this sensibility, and he seems to be alienated from the world of ordinary experience. By no means does he appreciate the beauty of the environment he finds himself in:

Indeed he seemed to her sometimes made differently from other people, born blind, deaf, and dumb, to the ordinary things, but to the extraordinary things, with an eye like an eagle’s. His understanding often astonished her. But did he notice the flowers? No. Did he notice the view? No. Did he even notice his own daughter’s beauty, or whether there was pudding on his plate or roast beef? (Woolf b, 2000, p. 77).

In contrast to Mr Ramsay, Septimus in *Mrs Dalloway* perceives his surroundings aesthetically and he recognizes the beauty of the everyday:

He strained; he pushed; he looked; he saw Regent's Park before him. Long streamers of sunlight fawned at his feet. The trees waved, brandished. We welcome, the world seemed to say; we accept; we create. Beauty, the world seemed to say. And as if to prove it (scientifically) wherever he looked at the houses, at the railings, at the antelopes stretching over the palings, beauty sprang instantly. To watch a leaf quivering in the rush of air was an exquisite joy [...]. Beauty was everywhere (Woolf, 2003, p. 52).

All these quotations illustrate Woolf's focus on the experience of the ordinary in her fiction and her aesthetic appreciation of the mundane, which suggests that even for her, the boundary between art in the narrow and broad sense is not fixed, but arbitrary. Particularly the description of Septimus's belief in the aesthetic value in all existing elements of reality is strikingly similar to Whitehead's emphasis on the fact that beauty is a quality intrinsic to all actual occasions, to all elements comprising our physical world. The following section of this article elaborates on this parallel between Woolf's fiction and Whitehead's philosophy as it examines the concept of perception, the impact of the thing observed on the perceiver and reattribution of aesthetic value to objects we no longer consider aesthetic.

Formulation of the main material. *Knowledge and Aesthetic Experience of the Everyday in Woolf's Short Fiction.* Woolf's 1917 short story "The Mark on the Wall" is known as the first published piece by the Woolfs' publishing house The Hogarth Press. The whole story describes a perception of a single mark on the wall whose identity a female observer attempts to reveal. Although the woman learns at the end of the story that the mark is a snail, an ordinary tiny animal which is usually expected to be found in the exterior, this does not undermine the importance of thinking and perceptual process the woman and the reader undergo in the story. At the very beginning, the woman gives in to the mark's lure and "automatic fancy" children usually indulge in while exploring the world around them: "How readily our thoughts swarm upon a new object, lifting it a little way, as ants carry a blade of straw so feverishly, and then leave it [...]" (Woolf, 1989, p. 83). Then, the woman ruminates about the possible origin of the mark and thus enters a percipient event with the object observed. Woolf uses the same introductory strategy also in her 1920 short story "Solid Object", where the main character John, a promising young would-be member of the parliament, comes across an irregular lump of glass hidden in the sand which fascinates him: "The green thinned and thickened slightly as it was held against the sky or against the body. It pleased him; it puzzled him; it was so hard, so concentrated, so definite an object compared with the vague sea and the hazy shore" (Woolf, 2020, p. 103). Both the mark on the wall and the lump of glass represent an anchor to which the two observers return after each train of thought, but also the source of their alienation from the present moment and their surroundings. Both characters suddenly become indifferent to what is happening around them and they attempt to penetrate beneath the surface of the new objects of their interest. As Whitehead points out in *Symbolism, Its Meaning and Effect*, perception consists in "an internal relationship" between a percipient and the thing perceived where both the observer and the object induce some activity in the other. In "The Mark on the Wall" the mark urges the woman to think about

“the mystery of life” and to “sink deeper and deeper, away from the surface, with its hard separate facts” (Woolf, 1989, 84-85), which may be approximated to Whitehead’s recurrent idea that philosophy and art should “go beyond what we already know about the world and to make our experiences which we are not clearly aware of present for us” (Dadejík et al., 2021, p. 15).

Later, the woman explores all the options of what the mark might be – “a nail, a rose leaf, a crack in the wood” (Woolf, 1989, p. 88) – and she rejects abstract generalisation and classifying the mark as one of “standard things”, therefore things defined objectively without considering their actual configuration, relations with their environment, the immediate interaction with the observer and the emotional and aesthetic response they generate: “The military sound of the word is enough. It recalls leading articles, cabinet ministers – a whole class of things which indeed as a child one thought the thing itself, the standard thing, the real thing, from which one could not depart save at the risk of nameless damnation” (Woolf, 1989, p. 86). The same idea reappears in *To the Lighthouse* where Woolf emphasizes, in relation to the observation of the lighthouse, that “nothing was simply one thing” (Woolf b, 2000, p. 202), which suggests that each individual experience of an object is singular and there is nothing like standardized aesthetic experience of it. This rigid approach to the knowledge of reality is embodied in the novel by Mr Ramsay, who examines the metaphysical question of the relation between the subject and the object and sees these two categories as distinct and unrelated. For him, an object is always a standard thing, an abstraction, a Plato’ ideal form, as in the case of “a white deal four-legged table” (Woolf b, 2000, p. 28), whereas Lily always perceives the two categories as interrelated and observes things in their aesthetic complexity, for example “a scrubbed kitchen table [...] one of those scrubbed board tables, grained and knotted” (Woolf b, 2000, p. 28). Woolf thus seems to be equally sceptical about generalization and a unitary abstracted characteristics of a single object as Whitehead.

In *Science and the Modern World*, he criticizes “scientific materialism” for relying on facts “abstracted from the complete circumstances in which they occur” and suggests to “pass beyond the abstraction” (Whitehead b, 1967, p. 17). He suggests that any philosophical theory should be as close to the concrete facts as possible and should not confuse abstracted data gained by scientific examination with the data collected during a particular percipient event and therefore surrender to the “fallacy of misplaced concreteness” (Whitehead b, 1967, p. 51). Whitehead’s dislike of abstraction is also an important aspect of his criticism of the “bifurcation of nature” discussed in *The Concept of Nature*. This concept consists in the distinction between “nature apprehended in awareness” – objects around us with their strictly physical properties that are examined without their complexity and relational bonds with other objects, or the observer, usually studied by physics – and “the nature which is the cause of awareness” – objects that function as triggers of our experience and that are complemented with “psychical additions” of the observer (Whitehead, 1920, p. 21). The former is thus strikingly similar to Mr Ramsay’s standardized and abstracted image of a table and the latter is a sham created by a human mind. Instead of these two natures, Whitehead claims that there is only one reality disclosed to our awareness and it “holds within it the greenness of the trees, the song of the birds” (Whitehead, 1920, p. 21) which subsequently triggers our aesthetic experience.

This may be likened to Lily's vision of a table which was not colourless and dull but complex and singular.

In "The Mark on the Wall" Woolf also raises an important epistemological question – whether we gain some knowledge about the external reality while perceiving an object – since the whole story may be read as Woolf's attack on the positivist stance of the 19th and early 20th century science (Sim, p. 40). The following quotation manifests Woolf's scepticism about the knowledge of the world around us and her criticism of scholars and scientists who personify the search for metaphysical truths and absolute knowledge at the expense of the aesthetic enjoyment of our immediate experience of reality:

No, nothing is proved, nothing is known. And if I were to get up at this very moment and ascertain that the mark on the wall is really – what shall I say? – the head of a gigantic old nail, driven in two hundred years ago, which has now, owing to the patient attrition of many generations of housemaids, revealed its head above the coat of paint, and is taking its first view of modern life in the sight of a white-walled fire-lit room, what should I gain? Knowledge? Matter for further speculation? I can think sitting still as well as standing up. And what is knowledge? What are our learned men save the descendants of witches and hermits who crouched in caves and in woods brewing herbs, interrogating shrew-mice and writing down the language of the stars? And the less we honour them as our superstitions dwindle and our respect for beauty and health of mind increases (Woolf, 1989, p. 87).

Analogously, in *The Concept of Nature* Whitehead claims that nature, conceived as a complex entity, can never be entirely disclosed to sense-awareness since "unexhaustiveness is an essential character of our knowledge of nature" (Whitehead, 1920, p. 9). According to him, "the notion of mere knowledge is a high abstraction" and the only thing we can grasp and describe is our emotional response to reality as "the basis of our experience is emotional" (Whitehead a, 1967, pp. 175-176). Likewise, the woman in the short story is reluctant to get up and identify straight and clear what the mark is or get closer knowledge of it, and she lets herself plunge into the stream of emotions and associations generated by the observation of the object.

Furthermore, the aforementioned quotation from the story suggests that the more specialist knowledge we have of an object, the less likely we are to apprehend it with pleasure. Whitehead also promotes the idea that any kind of specialized knowledge isolates scholars in their own "groove" and separates them from other aspects of being: "Thus in the modern world, the celibacy of medieval learned class has been replaced by a celibacy of the intellect which is divorced from the concrete contemplation of the concrete facts" (Whitehead b, 1967, p. 197). In accordance with Woolf's emphasis on the learned men's inability to appreciate the beauty abiding in their surroundings, Whitehead manifests a similar scepticism about the aesthetic appreciation of the subject studied: "When you understand all about the sun and all about the atmosphere and all about the rotation of the earth, you may still miss the radiance of the sunset. There is no substitute for the direct perception of the concrete achievement of a thing in its actuality" (Whitehead b, 1967, p. 199). Interestingly, the very ending of Woolf's story is devoted to this perception of the immediate environment in its actuality. The woman provides a list of concrete things and events which elicit "a satisfying sense of reality" (Woolf,

1989, p. 88) and these include, for example, the experience of touching wood, observing trees, cows in the field, or liveliness of animals inside and around a river.

While “The Mark on the Wall” introduces Woolf’s own response to theories of knowledge and perception and her criticism towards abstraction and generalization in favour of complex experience and aesthetic enjoyment of the ordinary, the 1920 short story “Solid Objects” is more concerned with the interrelatedness of the subject and the object in a percipient event and the transformative emotional effect of an object on our experience. Unlike the woman in the above-discussed story, who initially enquires about the mark’s origin, the protagonist of “Solid Objects”, who finds a lump of glass, is not driven by curiosity but by his attraction to this object. After discovering his first collected object, John immediately identifies it as a lump of glass and does not make any further enquiry into its origin, but the piece of solid matter is described in terms of its beauty as “a precious stone”, then as “a gem”, and finally as “an emerald” (Woolf, 1920, p. 103). Consequently, John becomes indifferent to his friend’s talk about politics, slips the lump down his pocket and displays it on his mantelpiece. Even there the object lures the man, regularly asks for his attention and enters his thinking process: “Looked at again and again half consciously by a mind thinking of something else, any object mixes itself so profoundly with the stuff of thought that it loses its actual form and recomposes itself a little differently in an ideal shape which haunts the brain when we least expect it” (Woolf, 1920, p. 104). This quotation suggests that Woolf attempts to overcome the division between the subject and the object in this story and highlights their interrelatedness like Whitehead, who emphasizes the relativity of these terms and their interdependence during the process of prehension: “An occasion is a subject in respect to its special activity concerning an object; and anything is an object in respect to its provocation of some special activity within a subject” (Whitehead a, 1967, p. 176). As a result, John may be interpreted as Whitehead’s “society”, a togetherness of actual occasions, which experiences an object that is also experiencing John and provokes some special feelings on his part. According to Whitehead, this is precisely what aesthetic experience should be like – a rhythmic togetherness of atomic vibrations between the experiencer and the thing experienced (Dadejick et al., 2021, pp. 116-117). Moreover, in the aforementioned quotation, Woolf undermines the traditional view of solid objects as passive blocks of matter and adopts the processual tendency to define things as “bundles of powers” (Rescher, 1996, p. 52), hence as active entities which are capable of inducing subjective reactions.

In this light, John can be regarded as a perceiving subject who realizes the creative potentiality of each object, hence also its value: “The creativity is the actualization of potentiality, and the process of actualization is an occasion of experiencing. Thus viewed in abstraction objects are passive, but viewed in conjunction they carry creativity which drives the world” (Whitehead a, 1967, p. 179). This suggests that any occasion of experience, or any object and society, can participate in the general creativity that aims at the production of the utmost beauty (Whitehead a, 1967, p. 265). Consequently, each element of reality is intrinsically beautiful as ‘beauty is a quality which finds its exemplification in actual occasions’ (Whitehead a, 1967, p. 252), and this beauty is actualized in the process of perception and experience. It seems that John, although alienated

from his established lifestyle and duties, is becoming increasingly aware not only of this beauty hidden in the everyday, but also the aesthetic values springing from diverse combinations of interacting objects. One of the last objects John finds is a piece of broken china in the shape of a star and he wonders about its uniqueness and contrast with other objects on his mantelpiece:

Set at the opposite end of the mantelpiece from the lump of glass that had been dug from the sand, it looked like a creature from another world – freakish and fantastic as a harlequin. It seemed to be pirouetting through space, winking light like a fitful star. The contrast between the china so vivid and alert, and the glass so mute and contemplative, fascinated him, and wondering amazed he asked himself how the two came to exist in the same world, let alone to stand upon the same narrow strip of marble in the same room (Woolf, 1920, p. 105).

The quotation manifests John's fascination by the ordinary object which is elevated to the status of a work of art generating aesthetic experience and the experience of Whiteheadian "vivid values" resulting from synthesized contrasts: "The discord enhances the whole, when it serves to substantiate the individuality of the parts" (Whitehead a, 1967, p. 282).

In *Science and the Modern World*, Whitehead points out that modern scientific and industrial progress resulted in the neglect of values and aesthetic experience from the material reality. He claims that the materialist basis of science "directed our attention to things as opposed to values", which led to the exclusion of "ultimate values" (Whitehead b, 1967, pp. 202-203). Interestingly, Woolf suggests a very similar idea in her essay "Docks of London" where she talks about turning everything into a commodity, which is classified only in terms of its monetary and utilitarian value: "One tusk makes a billiard ball, another serves for a shoe-horn – every commodity in the world has been examined and graded according to its use and value" (Woolf d, 2009, p. 196). Thus, Woolf herself was aware of the neglect of values underlying everyday things and commodities and in her short story "Solid Objects", she embodies an artist who should cultivate our 'habits of aesthetic apprehension' and to make us aware of the "individualized aesthetic value" (Whitehead b, 1967, p. 199). The last collected object mentioned in the story is a piece of iron which is described as "alien to the earth", probably "a dead star" and afterwards John's obsession gains more intensity as the man spends most of his time ransacking "all deposits of earth" where he finds discarded objects with the greatest value: "As his standard became higher and his taste more severe the disappointments were innumerable, but always some gleam of hope, some piece of china or glass curiously marked or broken, lured him on" (Woolf, 1920, p. 106).

This story has already been analyzed by Bill Brown via his 'thing theory' suggesting that things which no longer serve their common function may be presented to us in a new light as aesthetic objects while "we begin to confront the thingness of objects when they stop working for us" (Brown, 2009, p. 140). Brown claims that this reappraisal of objects and reassessment of their new value is possible only when they lose their function in our everyday lives. On the contrary, Lorraine Sim suggests that the story depicts a character who experiences "excitement at the mystery and strangeness of the world" (Sim, p. 47) and learns to reattribute "the overlooked value' to the 'everyday material world" (Sim, p. 52), which is closer to the idea discussed in the previous paragraphs. Whilst John represents as a compulsive character who is completely

alienated from other people and his personal duties, he may be regarded as a Whiteheadian poet who experiences the “rapture” caused by the observation of reality and relearns to appreciate the beauty in his environment which was devoid of its “intrinsic worth” (Whitehead b, 1967, p. 196). In contrast to Brown, both Woolf and Whitehead propose a theory claiming that anything, regardless its primarily utilitarian value, may be a trigger of aesthetic experience and have some emotional and transformative impact on the experiencer in the same way as any piece of art.

Conclusions. One of the main objectives of this article was to emphasize that while it is not known whether Woolf and Whitehead were familiar with each other’s works, they were contemporaries, and their thoughts are strikingly similar in many respects. Using different tools, Woolf her experimental fiction and critical essays about the art of writing and Whitehead his system of speculative thought, both were discontent with the materialist tone of the then science, philosophy, and fiction. As it has been demonstrated in the second section of this article, both the philosopher and the writer focused on experience, cherished it as the foundations of the material world, and agreed that it should be the subject of philosophy and fiction. Moreover, it has been indicated that experience for Whitehead and Woolf is always aesthetic as it transmits an emotion, or a feeling of rapture, induced by objects in our surroundings which is intrinsically beautiful and valuable. As a result, it was suggested that both Woolf and Whitehead do not draw a clear distinction between the experience of art and the experience of the ordinary reality around us. Whitehead wants philosophy to be as close to the concrete and mundane facts as possible and Woolf claims that anything can be the stuff of fiction, and stresses particularly our relation to the material surroundings. Consequently, Whitehead claims that art should focus on the neglected aspects of our experience and enhance our aesthetic appreciation of reality since art is just the extension of elements and values that may already be found in nature. The second section of this essay was concerned with Woolf’s short stories “The Mark on the Wall”, where the writer examines our perceptual processes and warns against perceiving things in our surroundings as generalisations or abstractions, and “Solid Object”, which analyses the interaction between the subject and the object and the emotional and transformative impact of this perception on the perceiver, for example by means of new appreciation of things around us as aesthetic objects. It has been demonstrated that in these stories, Woolf embodies Whitehead’s idea of an artist who should instruct their audience to reveal the values and aesthetic aspects hidden in our environment. To conclude, it is necessary to suggest that this lack of aesthetic appreciation was characteristic not only of the early 20th century but that it seems even more resonating in our time which still suffers from the two evils highlighted by Whitehead – the loss of our true relation to our environment and the neglect of value, hence even the aesthetic value, integrated in this environment. Therefore, Woolf’s and Whitehead’s aesthetic theories discussed in this article may be instructive also for contemporary artists who should also aim at drawing closer the ordinary and the aesthetic in order to foreground the worth of the external world, which we, human beings, destroy continuously.

Conflict of Interest and other Ethics Statements

The author declare no conflict of interest.

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Вероніка КРАЙЧКОВА

**ПОШУК КРАСИ ТА ЦІННОСТЕЙ ЩОДЕННО:
ВІРДЖІНІЯ ВУЛФ ТА ПРОЦЕСНА ЕСТЕТИКА**

Анотація. У цій статті досліджуються паралелі між естетизованим викладом реальності Вірджинії Вулф у її художній літературі та естетикою процесу Альфреда Норта Уайтхеда, яка підкреслює той факт, що будь-який досвід можна класифікувати як естетичну насолоду яскравими цінностями. Якщо вчені часто асоціюють Вульфа з високою модерністською естетикою і формалізмом, письменника захоплювала повсякденність і привабливість звичайних предметів, які викликають сильний емоційний відгук у суб'єкта, що сприймає. Особливо в її ранніх оповіданнях «Значок на стіні» та «Тверді предмети» головні герої демонструють дитяче бажання досліджувати навколишні об'єкти та потребу проникнути «глибше, подалі від поверхні, з її важкими окремими фактами». Так само у своїй філософській системі Вайтхед хоче вийти за межі того, що ми вже знаємо про зовнішній світ, і дослідити внутрішні органічні відносини, що стоять за зовнішнім виглядом речі, або, за словами Вульфа, «шаблон за ватою» повсякденності. У «Науці і сучасному світі» Уайтхед стверджує, що проблема сучасної цивілізації полягає у відсутності мистецтва, досвіду та цінностей в повсякденному, і що саме митець має виховувати «звички естетичного сприйняття». Вулф також відкидає дихотомію. Між мистецтвом у його вузькому й широкому значенні, що розуміється як естетичне задоволення реальності, і стверджує у своєму відомому есе «Сучасна художня література», що предметом сучасного мистецтва може бути що завгодно і що художня література повинна художньо перекладати враження «звичайних людей».

Ключові слова: Вулф, Уайтхед, естетика процесу, звичайний досвід, мистецтво

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DEEP ASSUMPTIONS

Abstract. The author studies the practices of understanding the world in Western and Buddhist cultures on the basis of comparing the attitude to the reality of the world and the reality of the human person. The author believes that the scientific vision of the universe, which has become dominant in Europe and which has influenced the scientific revolution of modern times, offers great advantages in terms of technological development of mankind, but it ignores the spiritual needs of the individual. Therefore, the author considers the synthesis of both traditions as a necessary prerequisite for overcoming the current worldview crisis. The article is

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devoted to the study of strategies for understanding the world in the European and Indian traditions. The author believes that the great simplification of understanding, which is associated with thinking or material substances in relative motion, has allowed the natural sciences to move forward quickly. But if the world consists of matter in motion, human goals play no role in explaining what is happening, and therefore people are not responsible for what they do. In contrast, in the East, particularly in India, thinkers paid more attention to discovering the essence of man and his attitude to the world. The author argues that human reality is such that people everywhere, even in the Indo-European world, live by stories. They can be pure myth or pure history or a mixture of both. In science, the only object of study is effective reason. Indo-European culture does not value for the purposes of cognition any sensory experience, except sight, because the data of any other sense organ do not fit into the world of matter. It is emphasized that science and philosophy, which are so arbitrary in the choice of empirical data and so committed to ideas for which there is no evidence, should not be considered the last word of those who truly love wisdom. Modern researchers should encourage thinking that is less closed in both science and philosophy.

Keywords: *strategy of understanding the world, multiculturalism, human attitude to the world, Whitehead*

Introduction. Philosophers, like everyone else, rarely ask truly fundamental questions about their own field. No doubt most of what I write here has been said by others, but even so, I do not find that it is widely considered. I want to emphasize that, and why, the great majority of Indo-European philosophy assumes that things are substantial, and that our experience of the external world is mediated primarily by the eyes. I want more attention given to the understanding of the world of those who speak other languages and more recognition of other dimensions of experience.

The other point I want to make is a narrowing of thought that has supported the failures I have discussed above. This is epistemological. Western scientists and most philosophers want to know about the external world. They have generally supposed that this knowledge depends on our sense organs. That sensory experience is very important cannot be doubted, but that there is no extrasensory experience is refuted by evidence. There are dramatic instances of this some of which operate even under the most controlled situations. Dogs seem to know some things about their masters without the aid of their senses.

More generally, we are affected by the anger and fear of others in ways that do not seem to be exhausted by sensory clues. If the past is viewed as “external” to the present, it is clear that its influence in the present is not mediated by the sense organs and, yet, plays an important role in our knowledge. If we begin with an understanding of the present moment of experience as a highly selective synthesis of past events, then the relative importance of different sources of knowledge can be discussed without the strong bias of most scientists against some of them.

I want also to show how narrow has been the understanding of sense experience. The empiricists, who established so much of modern scientific thinking, were strongly focused on sense experience. But if one examines what they say and how they function, they in fact pay very little attention to any sense experience except sight. So far as I recall they do not assert that they are making his limitation or give reason for doing so.

Analysis of recent research and publications. Indo-European languages typically build their sentences around subjects. The subject may be a house, or a mouse, philosophy, or a human being. The subject may be

described in the rest of the sentence, or there maybe a statement of what the subject has done or what has happened to it. Many different sentences can have the same subject. So, the subject is not exhausted by the characteristics or actions noted in the sentence. The dog is black. The same dog chases rabbits. The same dog obeys its master. The subject may change without ceasing to be the same subject. The dog could be the same dog even if none of these sentences remained true of it. The real dog underlies all these contingent facts. It stands beneath them. It is a substance.

If we ask what the subject essentially is, what it is in itself, we either remove all its changeable characteristics and keep only those characteristics which, if removed, would lead us to say that the subject no longer exists. This is the substance of that subject. The substance can cease to exist, but it cannot change. In a world composed of substances, change is superficial.

In India, the sage sought above all to learn about Atman and Brahman. Atman is the substantial being of oneself. Who am I truly? Brahman is the substance of all things, ultimate reality. For many sages the task was to understand their own substance (Atman) as in fact the substance of the whole "Brahman". The substance is experienced as the deeper reality, even the ultimate reality. The phenomena lose their hold on the one who recognizes them as secondary.

In Europe, the questioning about the substance of things was less connected to spiritual experience. In the Greco-Roman world, however, the orthodox doctrine of the Christian God was deeply affected by the primacy of substances over the phenomena (Halapsis, 2018). The biblical God is obviously person-like, and in interaction with human purposes. But the orthodox God of classical Christianity is nontemporal, immutable, beyond characterization. In Thomas Aquinas (Aquinas, 2021), the understanding of Being Itself is much like Brahman, and the spirituality of the West sometimes moved in the same direction as Hinduism. In the twentieth century, Paul Tillich took up this understanding of Being itself as God. But he did not emphasize the timelessness of human essences of subjects.

In the West, the diversity of substances and how they related to each other was of primary interest. Natural philosophy was also science, and in the late Medieval period it took off and transformed itself into natural science based on the view that the natural world is composed of a multiplicity of physical substances in relative motion. These could be called material objects, and the goal was to explain everything in terms of the motions of these material objects. We know that this has been amazingly successful and has led to incredible technological developments.

In the early part of the modern period, the reduction of nature to matter in motion was not applied to human beings. Humans were also substances, but not, or not only, material ones. Human being had minds and purposes, both lacking in the natural world. Nature, therefore, had no value in itself. Its value lay in its value for human beings.

The doctrine of evolution rendered this metaphysical dualism untenable. For a few people, the inclusion of human minds in nature called for rethinking nature. But the relation of scientific work to the idea of material substances was so entrenched, that the idea of changing it was unacceptable for most. Instead, the task was to explain the mind in terms of matter in motion. In general,

scientists think they have done so, but some recognize that consciousness remains as a problem.

There is also a recognition on the part of many, that the quantum world cannot be understood as material substances in motion. A few believe that since it underlies the nature science has studied, this calls for a deep change in our scientific thinking. More dismiss it as a “queer” and impenetrable mystery irrelevant to mainstream science. However, some of the students of quantum theory and some philosophers of science have developed an alternative metaphysics that deserves a great deal more consideration than it receives. This is largely due to the organization of our universities that encourages fragmentation of thought in academic disciplines and discourages any interest in coherence or inclusiveness.

David Bohm (Bohm, 1951) is widely recognized as a leader, perhaps the leader, if the rethinking required to make sense of the quantum world. He saw that the grammar of the Indo-European languages worked against the effort to understand. He proposed that if we shift from noun to gerunds in our normal speech, or at least in our scientific speech, a unifying breakthrough could occur. In short, the quantum world, and therefore everything that grows out of it, should be understood a world of events and processes rather than substances.

This critique of substance thinking occurred long ago in India. In his case it was not needed for scientific purpose. He meditated deeply on his own existence and the existence of the world and decided that there are no substances. There is no Brahman and there is no Atman. There are only events deriving from antecedent events. He introduced the idea of “*pratitya samutpada*” recovered in remarkably close ways in Whitehead’s understanding of the creativity of each event. In each moment, at each spacio-temporal location, aspects of the whole past are achieving new integration. The “many become one and are increased by one” (Whitehead, 1978, p. 21).

Formulation of the main material. The universe is the process of these creative syntheses becoming new creative syntheses. Nothing underlies these events. What we think of as substantial entities are in fact cumulative processes of events. The Buddha was the first to grasp and articulate this different metaphysics that today offers a coherent future for science.

If this well-developed alternative was around, why has it not been considered. The only answer I know is that science developed in places where an Indo-European language is spoken. We think in language. Thinking about how our language shapes our metaphysics is rare, even today. The Buddha remains a true anomaly.

It is worth noting that in the religio-philosophical area in which Buddha’s work has been influential, the people who have picked it up do not speak an Indo-European language. In China, Japan, and Korea, the languages differ, but none are Indo-European. They tend to focus on what happens rather than what is.

I grew up in Japan. The Japanese have a word for “I”. It is “*watakushi*”. When Westerners speak Japanese this four-syllable word appears extensively, and, to the Japanese ear, rather offensively. The culture does not encourage preoccupation with oneself. The grammatical focus is on what happens, not on the actors. The teachings of Buddhism do not counter the worldview implicit in

the language.

In the past half-century, I have been involved in the introduction of modern Western process thinking into China. It has been received much more readily there than in the United States. Here, despite the support it receives from science, it remains extremely marginal in the academy. In China thirty-five universities developed centers for its study. And although I am a Protestant theologian, I am much more appreciated in China than in the United States.

Probably the enormous simplification of understanding that is involved in thinking of material substances in relative motion enabled the natural sciences to advance rapidly. When we think that the full causal explanation of what happens involves the whole of the past, we are not encouraged to look for causes in a fruitful way. But when we find that we pay an increasing price for what the simplification requires us to ignore, it is time to do new thinking, even if that requires thinking against the “common sense” implications of our grammar.

Among the costs has been the necessity of teaching about human beings what no one believes. For example, if the world consists of matter in motion, human purposes play no role in explaining what happens. Human beings have no responsibility for what they do. Scientists who discover new features of the natural world deserve no credit. Perhaps I am wrong, and some people really believe the implications of the scientific worldview. Then we pay a higher price.

In order to save the moral view of life, many have followed Kant in holding that there are two modes of thinking, one the scientific to which we turn for explaining what happens and the other the moral, summed up in the categorical imperative, to which we turn when we think about how we should act. It helped to hold onto a moral universe for some generations. However, it has steadily lost ground. In our universities only the critique of pure theoretical reason is left. For many people, once purpose and value are understood to play no actual role in the world, discussing it loses importance.

Another cost is the loss of historical explanation. Strictly scientific explanation is limited to what is repeatable. Of course, that is a great deal. But historical explanation is also common and important. Currently, a Congressional committee is seeking to decide whether to bring legal charges against President Trump. It is not composed of scientists although scientific knowledge certainly is needed. We want to know what Trump knew when and what were the purposes of this and that act. The committee needs to construct an accurate history of Trump’s actions and intentions. These actions and intentions are not thought of as cases of how everyone acts under a given set of circumstances. Of course, this is relevant. But the greatest interest attaches to the most unique events, which, in principle fall outside of scientific consideration.

In general, although much that happens in history can be viewed as a specific exemplification of a universal principle, and this is important, the focus of authentic historical study is on what is unique. Books are written about the history of science and of specific sciences. Some scientists find them helpful for the advance of science. If scientists understand why they have developed their science in just the way they have, they will be helped in knowing how to deal with what to study now and even with possible changes

in standard policies. The history of a science cannot be studied as a science.

No one opposes informing students about what has happened in the past. But the study of unique events and how they have shaped the world is less and less encouraged in contemporary universities. This is another high price to pay for allowing the convenience and past success of what is thought of as the scientific worldview to give it universal dominance in our teaching.

Perhaps the highest cost of all still flows from the pre-evolutionary version of modernity. Actually, the dualistic thinking, human vs natural, continues. I have argued that no one really believes that she or he is nothing but matter in motion. We have continued to view nature as something to conquer and use. Modern technology has vastly expanded our conquest.

We now know that destroying forests and reefs, using fossil fuels, poisoning the soil, exhausting scarce minerals, and developing nuclear weapons put it in question the habitability of the planet. Precisely the success of the modern worldview is the cause of the greatest danger we face. At such a time to work toward excluding all other forms of thought from higher education and allowing no place for discussing the wisdom of this policy is dogma gone wild.

I hope it is clear that most of what I complain about is almost unavoidable once we are committed to substance thinking. I am pointing out that one does not need to study philosophy to favor this form of thought. If one allows one's ordinary language to shape your thought: "it is a mistake to think of words as primarily the vehicle of thoughts" (Whitehead, 1978, p. 182).

Others have pointed out that unlike Greco-Roman civilization, many have noted that ancient Israel emphasized hearing. The "external" world as known by hearing is very different from the one known by sight. Hearing focuses on verbal communication and music. If one seeks to attend only to what is given in the present moment of hearing what one gets is neither verbal communication nor music. It is meaningless and unmusical sound. But what one actually hears refer back and forth in time. The sound is heard as part of a word that is part of a sentence that may be part of a story. Or it is part of a musical phrase that is part of a song.

In other words, the moment is part of an ongoing process, apart from which it is not what it in fact is given to be. This contrasts with sight for which the given pattern of color seems to be what it is without reference to past or future. The world of sight fits with the world of substances. The world of hearing is always made up of processes. The Bible is a collection of stories and poetry and history. It does not ask or answer what the Indo-European culture understands as philosophical questions.

Yet the reality is that people everywhere, even in the Indo-European world live by stories. They may be pure myth or pure history or, more commonly, a mixture. Excluding story from the university is part of the cost being paid for absorption in the visual world.

There is a philosophical price too. It is especially clear in Hume, but for the philosophical world in general it has not been avoided since then. Hume recognized the importance of efficient causes in science (Hume, 1986, p. 129). One may say that in science they are the only object of study. Hume wanted to be an empiricist. For him the only sense organ appropriate for philosophy was vision. He found that he could not see any efficient cause.

If Hume had not assumed that vision is the only source of sensory knowledge for science and philosophy, he could have considered the experience of a wrestler being thrown to the ground. The wrestler feels the efficient cause of the action as pressure from his partner. When I am sucking a candy, I can feel the candy as the cause of the sweet taste in my mouth. When one listens to drumbeats, one can feel the alternating pressure in the ears. Even in sight one feels the role of the eyes. In other words, there is sensory experience of efficient causality, but because Hume sought it in the data of vision and nowhere else, he did not find it.

That Hume made this mistake could be just an interesting quirk in the history of philosophy. But that Kant took him to have proved that there is no sensory experience of causality shows that there is more to it than one eccentric philosopher. (Kant, 1961). To this day, most philosophers accept Hume's discovery and philosophical schools assume it. Apparently, Indo-European culture does not value for purposes of knowledge any sense experience other than sight. Perhaps this is because the data of no other sense organ fits into the world of substances.

Conclusions. My point in all of this is that a science and a philosophy that are so arbitrary in their selection of empirical data and so committed to ideas for which there is no evidence should not be considered the last word by those who really love wisdom. We should encourage thinking that is less closed both in science and in philosophy.

Conflict of Interest and other Ethics Statements

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Джон Б. Кобб ГЛИБОКІ ПРИПУЩЕННЯ

Анотація. Автором здійснено дослідження практик осягнення світу в західній та буддистській культурах на основі порівняння ставлення до реальності світу та реальності людської особистості. Автор вважає, що наукове бачення універсуму, яке стало домінувати в Європі, та яке вплинуло на наукову революцію Нового часу, дає величезні переваги в тому, що стосується технологічного розвитку людства, але при

цьому воно залишає поза увагою духовні запити особистості. Тому синтез обох традицій автор розглядає як необхідну передумову для виходу з сучасної світоглядної кризи. Стаття присвячена дослідженню стратегій розуміння світу в європейській та індійській традиціях. Автор вважає, що величезне спрощення розуміння, яке пов'язане з мисленням або матеріальними речовинами у відносному русі, дозволило природничим наукам швидко просунутися вперед. Але якщо світ складається з матерії в русі, людські цілі не грають жодної ролі в поясненні того, що відбувається, і, отже, люди не несуть відповідальності за те, що вони роблять. На противагу цьому, на Сході, зокрема, в Індії, мислителі більше уваги приділяли виявленню сутності людини та її ставленню до світу. Автор доводить, що людська реальність така, що люди всюди, навіть в індоєвропейському світі живуть історіями. Вони можуть бути чистим міфом або чистою історією або їхньою сумішшю. В науці ж єдиним об'єктом вивчення є дієві причини. Індоєвропейська культура не цінує для цілей пізнання жодного чуттєвого досвіду, крім зору, тому, що дані жодного іншого органу чуття не вписуються у світ речовин. Наголошено, що наука і філософія, які настільки довільні у виборі емпіричних даних і настільки віддані ідеям, для яких немає доказів, не повинні вважатися останнім словом тим, хто справді любить мудрість. Сучасні дослідники повинні заохочувати мислення, менш закрите як у науці, так і у філософії.

Ключові слова: стратегія розуміння світу, мультикультуралізм, ставлення людини до світу, Вайтхед.

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THE ROOTS OF APPLIED PHILOSOPHY AND ITS SIGNIFICANCE FOR KNOWLEDGE BASED SOCIETY

Abstract. The article is devoted to topical issues of the emergence of applied philosophy and its role in society. The important role of knowledge in modern society is emphasized. The concepts of pure and applied science, as well as applied philosophy are discussed. It is noted that applied knowledge can be considered as a philosophical knowledge of the third order, which inevitably leads to complete "truth", which is applicable always and everywhere.

The development of applied philosophy and its connection with applied ethics is considered, because applied philosophy developed primarily in such areas as ethics, as the concept of applied ethics was approved more than fifty years ago. The modern examples of the development of applied philosophy are discussed, in particular: the Center for Applied

Philosophy in Australia, the Society of Applied Philosophy in Great Britain, the Journal of Applied Philosophy published since 1984.

The thesis is that in the modern world any knowledge is somehow applied philosophy. It is noted that even in the most abstract field of philosophy – ontology and metaphysics – the applied approach has become widely accepted, so we can talk about applied ontology and applied metaphysics. The ideas of applied philosophy and more specifically applied ontology and applied metaphysics have developed widely only in the last few decades, but they have deeper and more ancient roots. Also in the last two decades, applied epistemology has begun to develop and spread.

It is noted that in a modern society based on knowledge, it is time to realize not only the possibility but also the real functioning of philosophy as an applied philosophy. The right approach is collaboration and interaction of philosophers with scientists, who are experts in specific sciences, because this is the only way to ensure that philosophical knowledge would not be misinterpreted or misused, but will find its place in modern research and development for the benefit of society as a whole.

Keywords: applied philosophy, applied ontology, applied metaphysics.

Introduction. It is widely approved view nowadays that the contemporary society cannot function properly and even cannot exist if it is not a knowledge based society. This view presupposes that knowledge should be deeply penetrated in all spheres of society and to find in some way an application in it. This is valid even for the most fundamental and most theoretical knowledge. In other words, it is required that even the most abstract knowledge to become an applied one. People did not reach to that understanding suddenly or all at once. This understanding presupposes a deep change of the character of the contemporary knowledge itself, closely tied to the development of science and philosophy and to the enormous changes of the character of the last ones – something for the realization of which given time was necessary.

The task of the present paper is to trace out at least part of the roots of that change and to see where have begun the ideas of applicability of science and philosophy, as well as to underline the role and significance of applied philosophy for the building up of knowledge based society explaining how that term should be understood. The present investigation inevitably will not be complete and it is impossible to be a complete one, because of the vastness of the topic; here I will just point out some characteristic moments.

Analysis of recent research and publications. *Pure and Applied Science.* First of all, I would like to pay attention on the fact that still in the first half of the 20th century the famous philosopher and thinker Alfred North Whitehead has wrote in his work *The Aims of Education* (Whitehead 1929a) that.

Science is a river with two sources, the practical source and the theoretical source. The practical source is the desire to direct our actions to achieve predetermined ends. ... The theoretical source is the desire to understand. Now I am going to emphasize the importance of theory in science. But to avoid misconception I most emphatically state that I do not consider one source as in any sense nobler than the other, or intrinsically more interesting. I cannot see why it is nobler to strive to understand than to busy oneself with the right ordering of one's actions. Both have their bad sides; there are evil ends directing actions, and there are ignoble curiosities of the understanding.

The above quotation clearly demonstrates that the brightest minds of mankind – what undoubtedly was Whitehead – have understood nearly 100 years ago what some contemporary scientists and philosophers are not able to understand today; they think that purely theoretical occupations are nobler than

the applied ones and that theoretical knowledge is higher than the applied one and more worthy of occupation for scientists and philosophers.

Apropos, the discussions about pure and applied science have begun a lot of time ago. It has happened first in mathematics, where the concepts of pure and applied mathematics have been approved long ago, and the discussion which of the two is the true mathematics have been held since a century ago. The initial views of applied mathematics as just an area of applicability of the pure or “true” mathematics have changed with the development and complication of applied mathematics. Mathematicians develop in applied mathematics mathematical theories that are closely connected with the usage of mathematics in different sciences and in the engineering. This is an area of mathematics that uses different methods and standards in comparison with the classical mathematics (Pincock 2009, p. 173).

The aim of applied mathematics is to clarify scientific concepts and to describe scientific phenomena through the use of mathematics and to stimulate the development of new mathematics by means of such investigations (Pincock 2009, p. 176).

That process of usage of mathematics has three stages: formulation of scientific problem in mathematical terms; solution of the so formulated mathematical problem; interpretation of the solution and its checking in the scientific terms of the initial scientific discipline (Pincock 2009, p. 176). Step by step a theory of applied mathematics has been developed and nowadays the applied mathematics is as much theoretical as the pure mathematics. The difference between them is only in the areas of investigation. Sometimes it is considered today that applied mathematics is less strict discipline than pure mathematics and that applied mathematics has semantical difficulties, as well as that applied mathematics is more important for philosophy. However, these views do not rest on serious arguments and – as the authors have pointed – when philosophers direct their attention to these differences between pure and applied mathematics, the problems will be found and clarified (Pincock, 2009).

The situation in other areas of scientific knowledge is analogous: we have theoretical physics and applied physics, and so on. Science however is not exhausted with the natural sciences only. Analogous processes are realized also in the field of humanities including philosophy.

Formulation of the main material. *Pure and Applied Philosophy.* In the last few decades it has begun to enforce the view of the presence of not only traditionally perceived up to now “pure” philosophy, but also of applied philosophy. Among the philosophical disciplines it has been realized first of all in areas such as ethics where the concept of applied ethics has been approved more than fifty years ago. I shall consider in more details the question what is understood by “applied philosophy”.

Usually the academic philosophy is considered as the study of reality from the perspective of its ultimate reasons and principles with the help of the human reason (Dolhenty, 2010). The traditionally differentiated branches of philosophy are metaphysics, ontology, epistemology, logic, ethics, etc., and every branch has its own specific. For example, ontology is the study of being (Dolhenty, 2010). On the other hand, philosophy is usually subdivided into speculative and descriptive philosophy, and normative or prescriptive philosophy. Metaphysics and epistemology belong to the first one, and ethics and axiology – to the second

one. A number of philosophers have added in the last three decades also a third type of subdivision: the so called applied philosophy (Dolhenty, 2010). The term “applied” itself means placed in practice or used practically. It can be formulated from here a general definition of applied philosophy.

It is the application of the principles and concepts derived from and based on philosophy to the investigation of our practical occupations and activities (Dolhenty, 2010).

It is important, because the applied knowledge is so to say philosophical knowledge of a third order that does not inevitably lead to a complete “truth” applicable always and everywhere. That is, so to say, the classical definition of applied philosophy. In more details, things are as follows.

Philosophical knowledge of the first order is mostly metaphysical in character. In other words, the principles and concepts of metaphysics are a basis for further philosophical meditation in both the normative and the applied areas. Purely philosophical knowledge of the first order is called a descriptive one, because metaphysics and epistemology “describe” reality or the real state of affairs. The philosophical knowledge of the second order includes axiology, ethics, aesthetics, politics and in general the disciplines that are normative in character. The philosophical knowledge of the third order is namely the applied philosophy. It deals with the question what practical application we can make in relation to the human occupations and human behavior, stemming from the study of descriptive and normative philosophy. To that type of philosophical knowledge belong education (including the recent development of philosophy of children), philosophy of law, philosophy of religion, philosophy of politics, philosophy of sports, philosophy of life, philosophy of science, etc. These three levels of philosophical knowledge place, respectively, different levels of problems or questions in philosophy (Dolhenty, 2010).

Applied philosophy obtains broader and broader circulation and develops successfully and it is even institutionalized. The evidences for all that are the building of Center for applied philosophy based in Australia which deals with investigations of the application of philosophical principles in the public debates and public politics. There exists a Society of applied philosophy in the Great Britten established still in 1982, whose aim is to support philosophical investigations that have direct relation to areas of practical interest. Most frequently they are related to different areas of public life – law, politics, economics, science, technology, medicine, education, etc. The Journal of Applied Philosophy is a body of the association which is published since 1984.

All these are evidences that applied philosophy more and more asserts its place as very important for the society occupation in the field of philosophy. There is even a broader view of applied philosophy. Contemporary science and contemporary philosophy have been changed radically and are not what they were for example in the 18th and 19th centuries. It is widely accepted that in the course of development of our civilization from Antiquity until now different new disciplines have been peeled off that were individualized as separated – among the newer such disciplines are psychology, sociology, linguistics, economics, etc. It appears as if philosophy loses ground under its feet and as if it loses without its subject except for a vague phrase that it deals with the most general principles of being and knowledge. However, in fact, the more similar disciplines multiplying and expanding the broader is the spectrum of philosophical questions which they

arise. And namely this is the area of applied philosophy.

From that point of view, it can be formulated and defense the thesis that in fact any knowledge is in a sense applied philosophy. Such extended view of applied philosophy questions to some extent the above pointed conditional division of philosophy into three spheres: descriptive, normative and applied. Because in our dynamic epoch of development of knowledge the borders itself, however conditional, between these spheres are fading and the spheres overflow into each other. I shall give an example with the descriptive philosophy – metaphysics and epistemology.

Applied Ontology and Applied Metaphysics

Nowadays even in the considered as the most abstract area of philosophy – ontology and metaphysics – the view of applied ontology has begun widely to be affirmed. Of course, that does not become acheless in the sense that many of the traditionally inclined philosophers meet “on a knife” the concept itself of applied ontology and reject that the content of occupations with them belong to philosophy at all. They point out as an argument that this concept has obtained wide usage mainly among the non-philosophical circles (computer scientists, engineers, mathematicians, logicians, etc.) and their reaction is approximately reduced to the following: “Oh dear! They took the good term. Let us struggle to take it back and not to allow the other people to use it”.

However, this is deeply wrong approach on the part of the traditionally strung philosophers. They do not take into account that the term “applied ontology” and its contents have been affirmed with the participation of philosophers and that in the serious interdisciplinary teams working nowadays all over the world for solving of applied tasks, connected with the so understood ontology, philosophers-ontologists participate by all means. The correct approach from the side of philosophers is namely that: not to struggle with scientists who are specialists in concrete sciences, but to cooperate and interact with them, to participate actively in such type of developments. It can be guarantee in this way only that philosophical knowledge would not be wrongly interpreted or used, and it will find its proper place in the contemporary investigations and elaborations in favor of society as a whole. I have written about applied ontology in more details in other works (Petrov, 2004).

The ideas of applied philosophy and more concretely applied ontology and applied metaphysics though widely developed only in the last few decades have their deeper and older roots. Here I again will quote Whitehead who in his work *Religion in the Making* (1926) introduces the understanding of applied metaphysics though in a different context than the contemporary discussions about applied philosophy. He says (Whitehead, 1926).

No religion which faces facts can minimize the evil in the world, not merely the moral evil, but the pain and the suffering. ... Both the great religions, Christianity and Buddhism, have their separate set of dogmas which deal with this great question. It is in respect to the problem of evil that one great divergence between them exists. Buddhism finds evil essential in the very nature of the world of physical and emotional experience. The wisdom which it inculcates is, therefore, so to conduct life as to gain a release from the individual personality which is the vehicle for such experience. ... One metaphysical fact about the nature of things which it presupposes is that this release is not to be

obtained by mere physical death. Buddhism is the most colossal example in history of applied metaphysics. Christianity took the opposite road. It has always been a religion seeking a metaphysic, in contrast to Buddhism which is a metaphysic generating a religion.

We see that Whitehead very clearly and undoubtedly speaks about applied metaphysics pointing that still far away before Christ Buddhism has fulfilled such function. It is true that at that time Buddhism did not come to right mind as such, because even the term “metaphysics” itself did not exist (it has appeared, as it is well known, only after the death of Aristotle), let alone to come to right mind as applied metaphysics. However, essentially, looked from a contemporary point of view, this is so and Whitehead underlines namely that fact. Let me pay attention that Whitehead understands metaphysics in the same way as it is understood today, namely (Whitehead 1926, p. 84):

By “metaphysics” I mean the science which seeks to discover the general ideas which are indispensably relevant to the analysis of everything that happens.

That is, it is not about any more detached or specialized view of metaphysics, but namely for the predominant understanding of metaphysics and namely in such sense it is quite natural to speak about applied metaphysic. The merit of Whitehead is that he has understood and has stressed that fact, without enslaving to some presuppositions for the impossibility the metaphysical knowledge to be applied.

On the other hand, I would like to pay attention to the fact that in the last two decades also the applied epistemology has begun to develop and to gain proliferation. The term itself “applied epistemology” has been introduced for the first time in 1989 by Mark Battersby who links it first of all with the critical thinking (Battersby, 1989). However, that term is used nowadays for much broader circus of investigation.

Conclusions. Actually, it is high time to realize not only the opportunity, but also the real functioning of philosophy as applied philosophy. Only on the basis of the clear realization of the aspect of philosophy as applied philosophy it can be argued its meaning and its place in the contemporary knowledge and as unseparated element of the presuppositions for the building up of a knowledge based society. But in order to realize in our life this important task of philosophy, we have to better understand the meaning of applied philosophy and its value for all of us.

Conflict of Interest and other Ethics Statements

The author declare no conflict of interest.

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Веселін ПЕТРОВ
КОРНІ ПРИКЛАДНОЇ ФІЛОСОФІЇ ТА ЇЇ ЗНАЧЕННЯ
ДЛЯ СУСПІЛЬСТВА

Анотація. Стаття присвячена актуальним питанням походження прикладної філософії та її ролі у суспільстві. Підкреслюється важлива роль знань у сучасному суспільстві. Обговорюються поняття теоретичної і прикладної науки, а також прикладної філософії. Зауважується, що прикладне знання можна вважати філософським знанням третього порядку, яке неминуче веде до повної «істини», застосовної завжди і скрізь. Розглядається розвиток прикладної філософії та її зв'язок з прикладною етикою, адже прикладна філософія розвивалася насамперед у таких областях, як етика, оскільки концепція прикладної етики була затверджена більше п'ятдесяти років тому. Наводяться сучасні приклади розвитку прикладної філософії, зокрема: діяльність Центру прикладної філософії в Австралії, Товариства прикладної філософії у Великій Британії, видання Журналу прикладної філософії з 1984 р.

Сформульовано тезу про те, що у сучасному світі будь-яке знання є в певному сенсі прикладною філософією. Відзначається, що навіть у найабстрактнішій галузі філософії – онтології та метафізиці – став широко утверджуватися прикладний підхід, отже можна говорити про прикладну онтологію та прикладну метафізику. Хоча ідеї прикладної філософії та більш конкретно прикладної онтології та прикладної метафізики широко розвинуті лише в останні кілька десятиліть, вони мають більш глибоке і давнє коріння. Також в останні два десятиліття почала розвиватися і набувати поширення прикладна епістемологія.

Наголошується, що в сучасному суспільстві, заснованому на знаннях, настав час усвідомити не лише можливість, а й реальне функціонування філософії як прикладної філософії. Правильний підхід полягає у співпраці та взаємодії філософів з ученими, які є спеціалістами в конкретних науках, бо тільки так можна гарантувати, що філософське знання не буде неправильно витлумачено або використано, і воно знайде своє відповідне місце в сучасних дослідженнях і розробках на благо суспільства в цілому.

Ключові слова: *прикладна філософія, прикладна онтологія, прикладна метафізика.*

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NEURONS, NETWORKS AND NEXUS

Abstract. The article discusses the problems of development of artificial neural networks (ANN) in the context of the methodology of AN Whitehead. The idea that nature itself controls the learning process boils down to pantheism or atheism from a theological point of view; because outside nature no other control mechanism is involved. On the other

hand, assuming the existence of an expert, there is an approach different from ANN. It makes sense to reduce the notion of the expert not only to his systematic functions, but also to include in him additional human qualities that, if desired, could bring him closer to a personal God.

The article is devoted to the consideration of software possibilities of connectionism for thinking process. The author argues that there are clear differences between the concept of Whitehead and ANN, because in the case of ANN is only about the most accurate and effective study of a goal, whatever it may be, while Whitehead deals with the aesthetic intensification of global contrasts. Gradual regulation of neuronal weights is only an expression of learning progress without any additional aspects. For Whitehead, overall weight distribution as an expression of aesthetic harmony would be crucial for the quality of communication, for example, based on the degree of entropy, but this does not play a role in the quality of ANN, measured solely by its ability to learn. In addition, self-determination or self-realization is irrelevant to neurons as opposed to real entities. But this is also a fundamental problem for Whitehead himself, as there is no meaningful application of these terms in the field of elementary processes.

It is emphasized that the main feature of Whitehead's ontology is that the world is a disjunctively diverse set that enters into a complex unity. The same applies to the flow of neuronal data: in a new neuron, data is inherited, processed and fed into subsequent neural processes, and so on. In a broader sense, creativity is inevitable in ANN processes, because if the speed of learning is too high, the convergence of the error function is no longer guaranteed; if the speed is too low, the number of required training runs can be very large. When adjusting the weights, it can happen that the optimization is stuck in the local minimum.

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Keywords: *artificial neural networks, Whitehead, connectionism*

Introduction. In the following I would like to make a suggestion and put it up for discussion on how Whitehead's *categorical scheme (cosmology)* presented in *Process and Reality (PR)* can be applied to current issues that come more from the exact sciences. My aim here is to connect to the current topic of so-called *connectionism*, which is excellently suited to exemplify Whitehead's *categorical scheme*, including some of its theological implications, and thus reaffirm the *adequacy* of the scheme as intended by Whitehead (For an entry into connectionism is well suited James Garson: *Connectionism*. In: Edward N. Zalta (ed.): *Stanford Encyclopedia of Philosophy*).

So far as I see there has been no Whiteheadian effort on this issue, although the programmatic proximity to the process-relational and interconnective world view is obvious. I do not think it is an exaggeration to say that connectionism is a crucial interface between Whitehead's cosmology and a mindset which largely dominates today's Artificial-Intelligence research, and thus is the focus of public interest. In particular, neural networks (machine learning, deep learning) are able to create simulations and forecasts for complex systems and interrelationships, as in weather forecasting, medical diagnostics, economic processes or image recognition. But also philosophers are interested in neural networks because they may provide a new framework for understanding the nature of the mind and its relation to the brain insofar as the brain is a neural net, formed from massively many units (neurons) and their connections.

The purpose of the article. I would like to give a brief philosophical outline of the broad topic of connectionism in order to draw attention to its programmatic potentials for process thinking. Please note if I use very simplistic examples throughout, and perhaps overly so, then only for the purpose of easy understanding.

Formulation of the main material.

1. *The functional shift.* Connectionism is an approach to modeling cognitive systems which uses so-called artificial neuronal networks and other features of machine learning. Artificial neural networks (henceforth: ANN), i.e. networks of simple *cells/units/neurons* (henceforth: neurons) are inspired by the basic structure of the natural nervous system. The basic ideas of the artificial neuron date back to the 1940^s and 50^s (McCulloch, Pitts, Rosenblatt) and were brought to maturity by the so-called back-propagation learning algorithm by Rumelhart in the 1980^s.

This progress inaugurated a renaissance of ANN in a variety of disciplines using computer modeling including psychology, artificial intelligence and physics (Backpropagation or also error feedback is a common procedure for the teaching of artificial neural networks, and is applied as a generalization of the Delta learning rule to multi-layer networks. For the sake of simplicity, I will continue with examples of the Delta rule for single-layer networks).

In order to understand the philosophical meaning properly, we must first recall the intellectual situation in which the connectionist model is originally located: In my perception, around the 1940th a paradigm shift took place which led from a substance thinking to a functional/dynamic thinking, which is still determining today. Examples of the *functional paradigm* are (1) ANN which can be seen as chains of functions, which in turn can represent and learn (approximately) arbitrarily complex functions and patterns, but it must also be mentioned (2) the functional algebra of mathematical Category Theory (McLane, Eilenberg), the preferred mathematical approach today, and of course (3) the Lambda Calculus (Church, Kleene), having influenced functional programming essentially – and much more, I must limit myself here. Whitehead's *process philosophy* in PR – next to Cassirer's *Substanzbegriff und Funktionsbegriff* – was the prominent *metaphysical* forerunner around the 20th, insofar as his ontology is based on *simple abstract functional input-output cells/units* (Whitehead: *actual entities/occasions*), whose connection (Whitehead: *nexus*) forms a kind of abstract neural

network (chains of functions). Forward-looking views of the techniques of Category Theory or ANN, however, cannot be suspected in Whitehead; he just provided the appropriate metaphysics in his PR.

Since the matter is very complex, I will confine myself to a small example from Category Theory, just to give an impression of this paradigm shift, before I return to ANN. From the late 19th century (Cantor, Peano, Frege, Russell etc.) it was clear that all mathematics could be built on set theory using the elementary relationship \in , a two-digit logical relation between an individual and the set to which the individual belongs. The ontological intuition underlying the relation \in is that of substance and property (intension, quality) or the corresponding set (extension, quantity), according to which the substance is that which persists in time, and the quality is that which changes in time, as was customary in tradition, cf. Kant's doctrine of schematism. The logical expression of this is the so-called predicate calculus. The proposition e.g. that this beetle is black, is usually formalised as follows: $b \in \text{beetle} \ \& \ b \in \text{black}$. The functional language of Category Theory replaces the elementary relationship \in by \rightarrow called "arrow" or "morphism", whereby the ontological concept of substance and property is abandoned in favor of abstract objects – without explicit internal structure – between which the arrow relation exists. Since I cannot go into details here, I will only give the diagram for the above proposition:

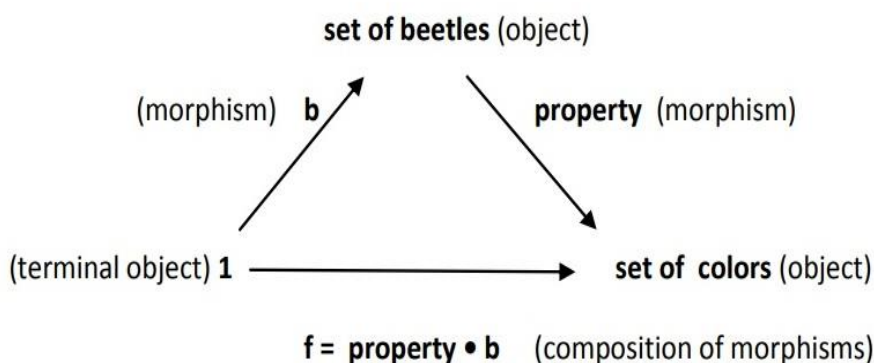


Figure 1 – Logical predicates

Note that there is no individual b , rather b is a morphism $b: 1 \rightarrow \text{beetle}$, that means that the so-called terminal object "1" selects an instance from the object "beetle", which here is a set, and which in turn is mapped onto the set of colors. " $f = \text{quality} \cdot b$ " indicates that the axiomatic rule of composition of morphisms is given. So, this tiny category consists of three objects and three morphisms that meet some standard axioms of Identity, composition etc. If Whitehead calls for a new language in PR, this does not necessarily have to amount to a romanticizing metaphor; it could be that he had an arrow-theoretic dynamisation in the style of Category Theory in mind. Arrows and objects correspond to the *idea of process* rather than individuals and properties. In the case of ANN (and certainly other

functional models) the bridge to Whitehead's ontology via category theory is obvious and needs no artificial reformulation as in the case of theories formulated in substance – accident jargon. For an ANN is an object of a so-called diagram category. The objects here have the form $(A \text{ -}f\text{ -} B)$, where A is the input and B the output, f is the processor or the so-called black box. In the language of Whitehead's ontology the input corresponds to the pretensions' of an actual entity, the processor to its private process of concrescence, and the output to its objective datum. The application of Whitehead's ontology to ANN will be discussed in much greater detail below, though without making reference to Category Theory in detail; this would be an investigation in itself, which would take us too far here.

2. The natural neuron.

In the sense of an interdisciplinary approach, I would first like to recall the connection between a natural and an artificial neuron, and then subsume them under Whitehead's scheme. A natural neuron is mainly composed of three parts and an external part called synapse:

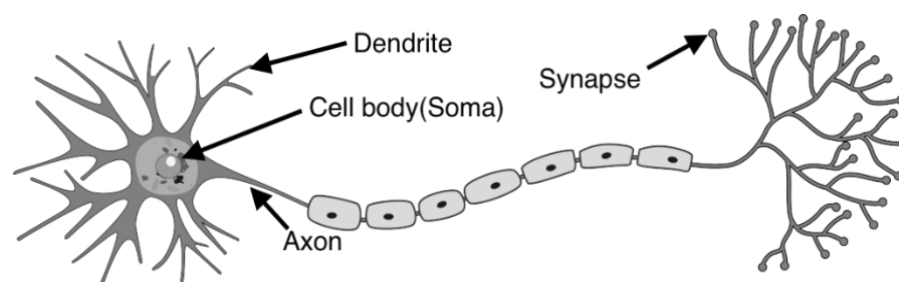


Figure 2 – Connection between a natural and an artificial neuron

1. Dendrites are responsible for getting incoming signals from outside. Soma is the cell body responsible for the processing of input signals and deciding whether a neuron should fire an output signal.

2. Axon is responsible for getting processed signals from neuron to relevant cells.

3. Synapse is the connection between an axon and other neuron dendrites. The task of receiving the incoming information is done by dendrites, and processing generally takes place in the cell body. Incoming signals can be either excitatory – which means they tend to make the neuron fire (generate an electrical impulse) – or inhibitory – which means that they tend to keep the neuron from firing. Most neurons receive many input signals throughout their dendritic ramifications. Whether or not a neuron is excited into firing an impulse depends on the sum of all of the excitatory and inhibitory signals it receives, and also on the fire threshold or bias. According to the all-or-nothing principle, the neuron discharges completely – or not at all. If the neuron does end up firing, the nerve impulse, or action potential, is conducted down the axon. Towards its end, the axon splits up into many branches and develops bulbous swellings known as axon terminals (or nerve terminals). These axon terminals make connections on target cells, such as gland cells, muscle cells or other neurons.

3. The artificial neuron.

Artificial neuron – also known as perceptron – is the *basic unit* of the artificial neural network. In simple terms, it is a mathematical function based on a model of natural neurons. An example of this is a simple logic gate/function [henceforth: function] with binary inputs and outputs. Each artificial neuron has the following main components:

1. It takes inputs from the input layer.
2. Weighs them separately and sums them up, and
3. Pass this sum through a nonlinear function to produce output.

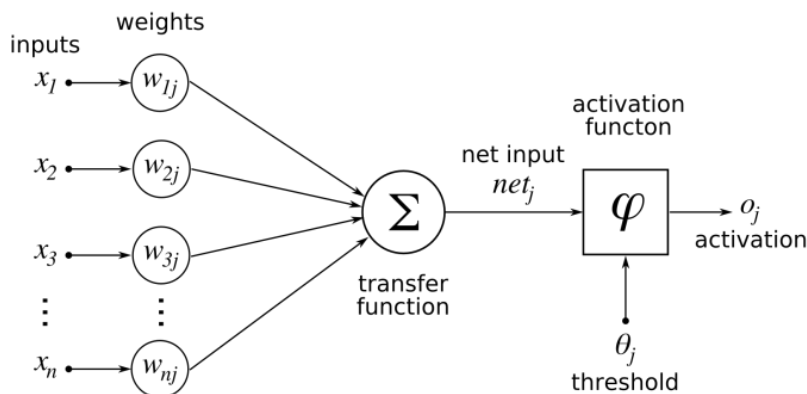


Figure 3 – Artificial neuron

The neuron/perceptron consists of four parts:

1. One input layer / Input values: input values are passed to a neuron using this layer. It might be as simple as a collection of array values. It is similar to a dendrite in natural neurons.

2. Weights and threshold:

Weights are a collection of array values which are multiplied to the respective input values. One then takes a sum of all these multiplied values which is called a weighted sum. One also speaks here of synaptic weights to draw attention to the strengthening and inhibiting effect of the synapses on the transmitted impulses. Next, one adds a threshold/bias value – representing the fire threshold of a natural neuron – to the weighted sum to get final values for prediction by the neuron.

3. Activation Function:

Activation Function decides whether or not a neuron is fired. It decides which of the output values should be generated by the neuron.

4. Output Layer:

Output layer gives the final output of a neuron which can then be passed to other neurons in the network or taken as the final output value.

Note that this simplified model does not mimic neither the creation nor the destruction of connections (dendrites or axons) between biological neurons, ignores signal timing and much more besides. However, this restricted model alone is powerful enough to work with simple classification tasks and can represent some Boolean functions like OR, AND or NAND. In order to approximate not only Boolean, but arbitrary (linear and non-linear) functions – for example by superposition of a sigmoidal function (see below) in Fourier

analysis style (Cybenko, 1989) – several neurons must be interconnected to networks with at least one intermediate/hidden layer of neurons, called multilayer neurons. So, multilayer neurons contrary to single layer neurons have a kind of far-reaching *universality*. In case of a multilayer neuron, the formulas below, which refer to a single layer neuron, have to be modified a bit, which I will refrain from here for the sake of simplicity.

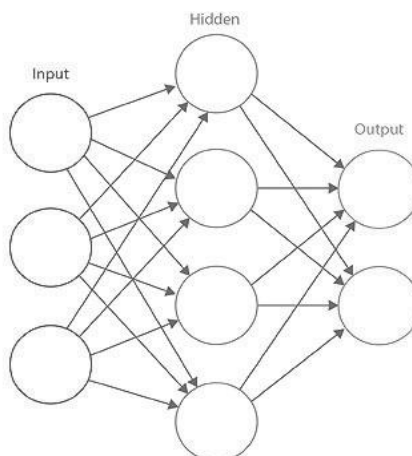


Figure 4 – Parts of the neuron

Let us now take a closer look at how neurons work. The neuron is introduced in the following way: First, the activation v (referred to as "net input" or "net" in the figure above) of the artificial neuron is defined by:

$$v = \sum_{i=1}^n x_i \cdot w_i - \theta \quad (1)$$

Additional input $x_0 = 1$ – weighted by w_0 – is usually introduced as a mathematical simplification for the threshold/bias θ , so:

$$v = \sum_{i=0}^n x_i \cdot w_i \quad (2)$$

$$o = \varphi(v)$$

Where:

- n: the number of inputs
- x_i : the input with index i , which can be both discrete and continuous
- w_i : the weighting of the input with the index i
- φ : the activation function and
- o : the output.

As activation function φ different function types can be used, depending on the network topology. Such a function can be non-linear, for example sigmoid, piecewise linear or a hard limit function. For the sake of simplicity we only consider the hard limit function and the sigmoid function from the set of possible functions.

$$\varphi^{\text{hlim}}(v) = \begin{cases} 1 & \text{if } v \geq 0 \\ 0 & \text{if } v < 0 \end{cases} \quad (3)$$

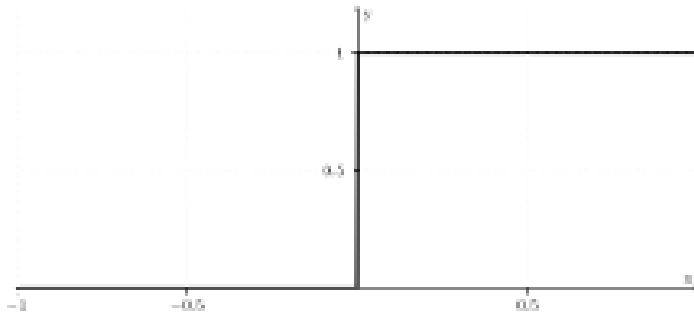


Figure 5 – Limit function

The hard limit function, as defined below, takes only the values 0 or 1. The value 1 for the input $v \geq 0$, otherwise 0. With subtractive use of a threshold value θ , the function is only activated if the additional input exceeds the threshold value. A neuron with such a function reflects the *all-or-nothing property* of the biological neuron. Sigmoid functions as activation function are very often used. As defined here, they have a variable slope a which influences the curvature of the function graph. A special property is their differentiability, which is required for some procedures such as the back-propagation algorithm.

$$\varphi_a^{\text{sig}}(v) = \frac{1}{1 + \exp(-av)} \quad (4)$$

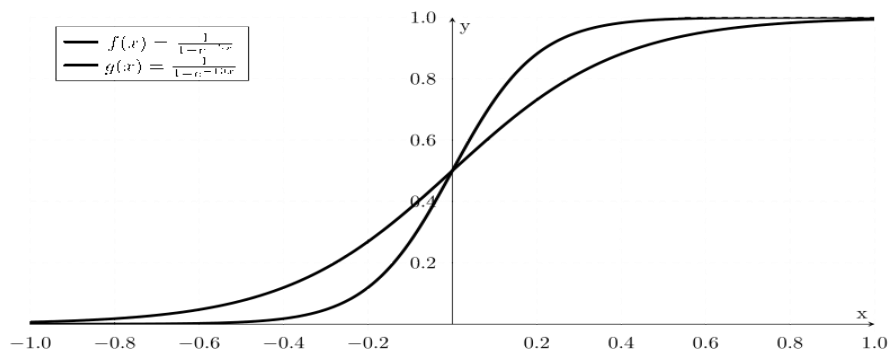
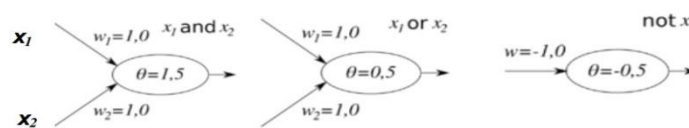


Figure 6 – Sigmoid function

The values of the above functions are in the interval $[0, 1]$. For the interval $[-1, +1]$ these functions can be defined accordingly. Single artificial neurons can be used to represent some Boolean functions – here, the three functions conjunction (AND), disjunction (OR) and negation (NOT) can be represented using a threshold and φ^{hlim} as follows:



[9]

Figure 7 – Boolean functions

For the AND function, for example, it can easily be seen that only for the Boolean inputs $x_1 = 1$ and $x_2 = 1$ activation is 1, otherwise 0.

$$o = \varphi^{\text{hlim}} \left((w_1 \cdot x_1 + w_2 \cdot x_2) - \theta \right) = \varphi^{\text{hlim}} \left((1.0 \cdot 1 + 1.0 \cdot 1) - 1.5 \right) = \varphi^{\text{hlim}}(0.5) = 1 \quad (5)$$

In contrast to the previous example, in which the appropriate weights were given externally, neurons have the fascinating property of learning the function to be represented. The weights and the threshold are initially assigned random values and then adjusted using a learning algorithm. To learn the AND function above, the so-called Delta learning rule can be applied. This learning rule finds its psychological counterpart in the learning rule according to Hebb. It adds the values of incorrectly recognized inputs to the weights to improve recognition until all inputs are correctly classified. The activation function here is the function φ^{hlim} analogous to the previous example – under certain conditions one could choose φ_a^{sig} as well. For the learning procedure, the learning rate, which determines the speed of the learning process, is defined here with $\alpha = 1$. Thus, there is no explicit mention of it. Instead of specifying the threshold value as such, an additional neuron (bias), i.e. a constant input $x_0 = 1$ is added specified by the weight $w_0 = -\theta$.

The delta learning rule can be expressed briefly as follows

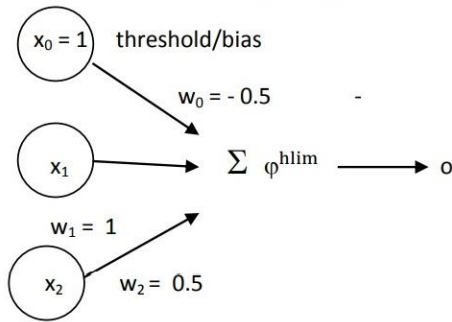
$$W^{\text{new}} = W^{\text{old}} + \Delta W \quad (6)$$

By adding the incorrectly recognized inputs, the corresponding weights are corrected by

$$w_i^{\text{new}} = w_i^{\text{old}} + \sum_j \alpha \cdot (t_j - o_j) \cdot x_i \quad (7)$$

where:

- j: the number of the input,
- t_j: the desired output (target),
- o_j: the actual output
- x_i: the input and



[12]

$\alpha < 0$: the learning rate coefficient

For the AND function with the corresponding initial random weights the teach-in table then looks like this how to calculate easily:

Table 1

epoch	X_0	X_1	X_2	W_0	W_1	W_2	sum	Actual o	Target o
1	1	0	0	-0.5	1	0.5	-0.5	0	0
	1	1	0	+1	1	0.5	2	1	0 error
	1	0	1	0	0	0.5	0.5	1	0 error
	1	1	1	-1	0	-0.5	-1.5	0	1 error
epoch	X_0	X_1	X_2	W_0	W_1	W_2	sum	Actual o	Target o
2	1	0	0	-0.5	1	0.5	-0.5	0	0
	1	1	0	-0.5	1	0.5	0.5	1	0 error
	1	0	1	-1.5	1	0.5	-2	0	0
	1	1	1	-1.5	1	-0.5	0	0	1 error
epoch	X_0	X_1	X_2	W_0	W_1	W_2	sum	Actual o	Target o
3	1	0	0	-1.5	1	0.5	-1.5	0	0
	1	1	0	-1.5	1	0.5	-0.5	0	0
	1	0	1	-1.5	1	0.5	-1	0	0
	1	1	1	-1.5	1	0.5	0	1	1

The neuron has learned to represent the AND function as in the first example, but without specifying certain weights in advance. It iterates the adjustment of the weights according to the learning rule until the actual values match the target values. The term “epoch” refers to one cycle through the full training dataset, here the four truth value distributions of the AND function. Usually, training a neural network takes more than a few epochs as in this little example. Further, one should feed the training data in different patterns for a better generalization when given a new “unseen” input (test data); for reasons of simplicity this variation of test data is left out here; they always have the same order. When the learning goal is reached, the training phase is over. That this – in principle – always succeeds is shown by the proof of the important *convergence theorem* for the learning of the neuron: every function that can be represented, can be learned! (Rosenblatt, 1958) An artificial neuron is able to learn some functions by machine even without an entire network. However, a *single* neuron is not able to learn *every* function so that multilayer neurons are

inevitable; we will illustrate this with the example of the AND and XOR (exclusive OR: either/or) function.

Let us compare the AND function with the XOR function using the corresponding truth tables:

AND	x_1	x_2	XOR	x_1	x_2	
0	0	0	0	0	0	
0	1	0	1	1	0	
0	0	1	1	0	1	
1	1	1	0	1	1	(14)

For these truth tables to be fulfilled, the corresponding weights and thresholds must be chosen so that each row of the tables is fulfilled by it. In the case of the AND function this means:

$$\begin{aligned}
 0 \cdot w_1 + 0 \cdot w_2 &< \theta \\
 0 \cdot w_1 + 1 \cdot w_2 &< \theta \\
 1 \cdot w_1 + 0 \cdot w_2 &< \theta \\
 1 \cdot w_1 + 1 \cdot w_2 &\geq \theta
 \end{aligned}$$

This holds obviously always if w_1, w_2 and θ are chosen so that $w_1 < \theta, w_2 < \theta$ and $w_1 + w_2 \geq \theta$ applies. Every choice of weights that fulfills this condition realizes the logical AND function. Here it becomes clear that there is more than one solution to realization of the AND function.

The XOR function meets the conditions:

$$\begin{aligned}
 0 \cdot w_1 + 0 \cdot w_2 &< \theta \\
 0 \cdot w_1 + 1 \cdot w_2 &\geq \theta \\
 1 \cdot w_1 + 0 \cdot w_2 &\geq \theta \\
 1 \cdot w_1 + 1 \cdot w_2 &< \theta
 \end{aligned}$$

This can only be achieved if $w_1 \geq \theta, w_2 \geq \theta$ and $w_1 + w_2 < \theta$. But, these conditions do not apply to any possible choice of w_1, w_2 and θ . The solution space is empty: A network consisting of a single neuron representing the XOR function does not exist in principle. For a multilayer neuron this problem does not exist. So we go to the multilayer neuron.

The Boolean formula of a XOR function is:

$$(x_1 \text{ and } (\text{not } x_2)) \text{ or } ((\text{not } x_1) \text{ and } x_2) - \text{ what does say: either } x_1 \text{ or } x_2$$

We simplify this expression to:

$$(x_1 \text{ or } x_2) \text{ and } (\text{not } (x_1 \text{ and } x_2)).$$

From this simplified expression, we can see that the XOR function consists of an OR function, a NAND (= NOT(AND)) function and an AND function. (But also a combination of AND, OR and NOT works here. There are various ways and values to achieve Boolean functions). This means we will have to combine two neurons:

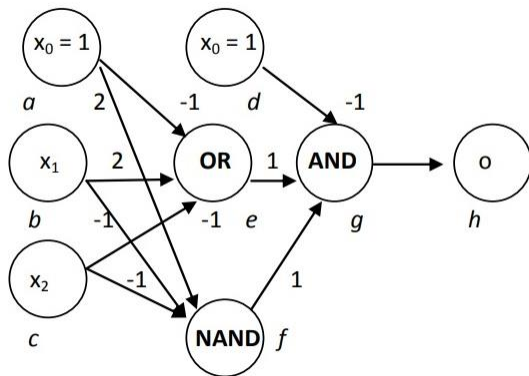


Figure 9 – Combination of AND, OR and NOT

As it is important for further considerations, let us keep in mind that NAND and NOR functions are *universal* for computation insofar as any Boolean function, however complex, can be composed of NAND and NOR functions. The proof is easy to provide via appropriate truth tables. It follows that neural networks are *universal* for Boolean computation.

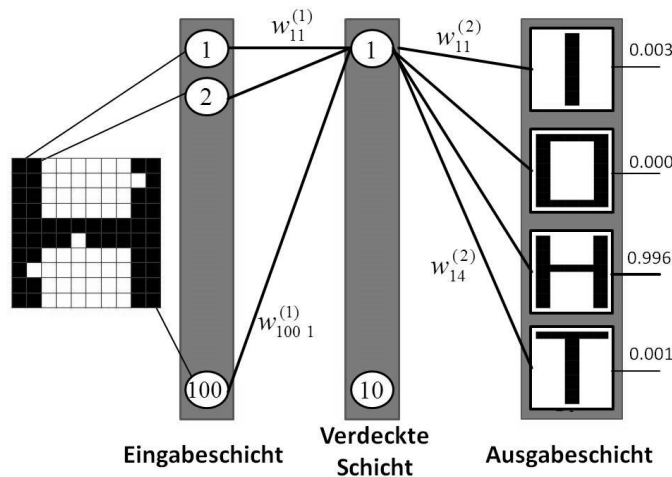


Figure 10 – Boolean computation

Based on the last network, you now have at least an impression of how pattern recognition basically works. This net here has as input not two but 100 pixels (10×10) with two states (1,0 = white, black) and as output not two (1,0) but 4 identifiers (I, O, H, T), which can be approximated by the net. No matter into which dimensions one enters, the idea of the ANN always remains the same; more cannot be shown here.

Finally, it should be mentioned that the learning process, as far as it has been discussed here, corresponds to so-called *supervised machine learning* – it describes the recognition of correlations in data sets. In contrast to unsupervised machine learning, both the input and the output are already

present in the form of a data set. The algorithms learn (train) the relationship between input (features) and output (label) in these data. After the teach-in phase, the trained algorithm can be applied to new input data to predict a result based on the learned relationships. Supervised learning means that the network is trained under the guidance of a *supervisor*, who can be an *expert* but also *selective environmental conditions*, leading the inputs deliver to the desired outputs. The training process can be visualized clearly using the flowchart for ANN learning through back-propagation resp. Delta-rule.

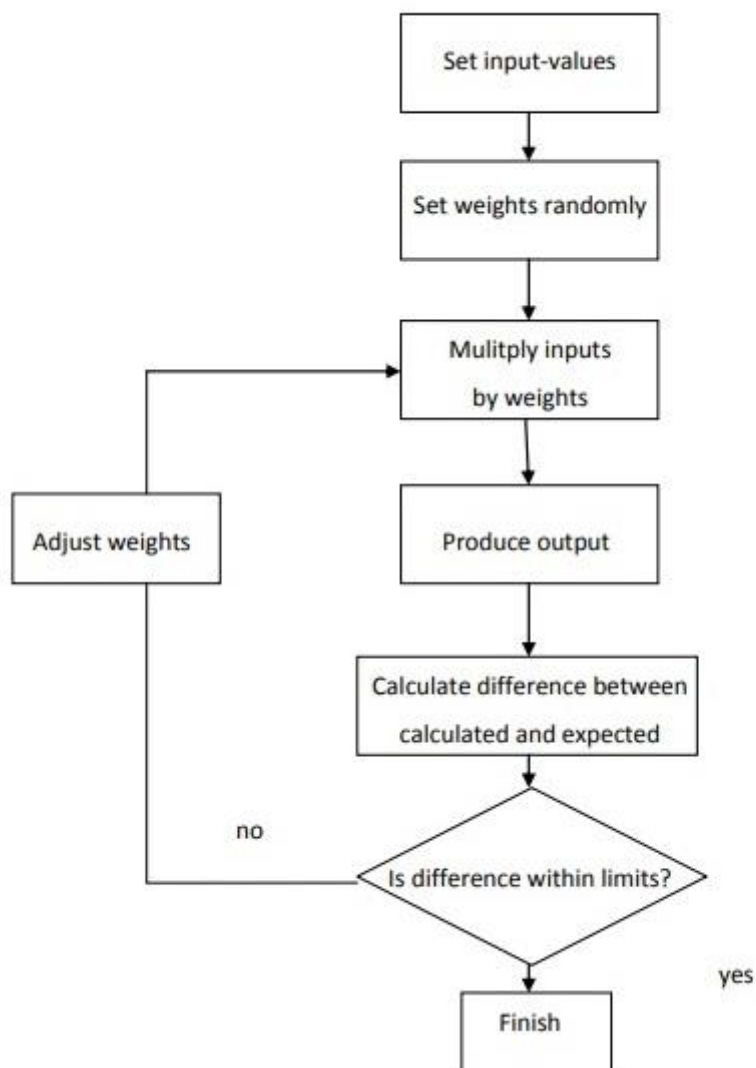


Figure 11 – Supervised machine learning

4. Whitehead’s Ontology and ANN

Recent developments in the sciences, e.g. quantum physics or ANN, offer many opportunities for metaphysical interpretations beyond mere materialism – and since there are no standard limits to interpretation; there is a danger that scientific models will be overly charged with metaphor and intimated into ideological constructs of meaning and wishful thinking. This brings to mind the skepticism of many scientists towards metaphysics in

general. In my understanding, there are at least two rational variants of metaphysics, though: 1. the transcendental approach (Kant), which analyses the conditions of the possibility of scientific knowledge, and 2. The inductive approach, which seeks analogous extensions of the relevant models – also into other disciplines – under guidance of a flexible ontological scheme (Whitehead).

In the sense of the latter, I would now like to extend the analogy between natural and artificial networks into the ontological realm, pointing to their common analogy to Whitehead’s actual entities and nexus as superordinate categories. Since I have to be brief, I can bring no more than a superficial sketch of Whitehead’s ontology tailored to the intended points of comparison regarding ANN. Certainly, there is much more to be said and discussed here, but this will have to be postponed until later.

a. Actual Entities and Neurons

Already the structural sketch of an actual entity reveals a similarity to the above sketches of a natural and biological neuron.

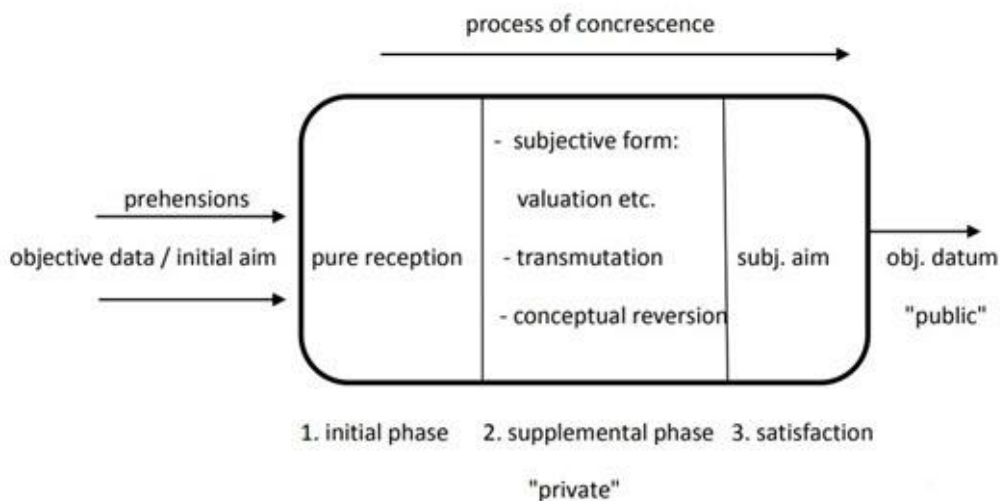


Figure 12 – Structural sketch

Let us be a bit more precise: According to Whitehead, the so-called actual entities are atomic processes, which are isomorphic to each other, on which the whole reality is based. They should not be hypostasized in any case, but rather they are to be understood as regulative ideas or guidelines, under which real existing processes, as they occur e.g. in elementary particle physics, are to be considered. But one can also find examples of actual entities in *model worlds*, such as the Cellular Automata or as here in the world of ANN – nevertheless, one must be aware that Whitehead’s primary intention was physical applications (For a modeling of Whitehead’s ontology using cellular automata see: Michael Rahmfeld: Cellular Automata, in: Science and Mind in Contemporary Process Thought, ed. by Jakub Dziadkowiec and Lukasz Lamz, 2019).

An actual entity is a process of concrescence (growing together), in which initial data are causally absorbed and finally processed towards a subjective aim. (1) In the first phase of this process, the output data of other actual entities, which are objectively available (public), are prehended or felt

(positively or negatively by exclusion), purely receptively. They are simply re-enacted (reactivated) without further modifications. Among the initial data is also the prehension of the divine actual entity (God), who is the carrier of all eternal objects (i. e. conceptual forms in the broadest sense) and provides the initial aim in question. The initial aim is a set of eternal objects, which guide the individual concrescence. This set of eternal objects is derived from a somehow ordered class of *all* eternal objects, where the selection criterion depends on the relevance of the eternal objects to be selected for achieving the individual concrescence goal. This means that with this selection the *ideal of development*, called subjective aim, is given.

(2) In the supplemental phase (private), the data are processed according to the subjective form of the actual entity, i.e.

(a) the relevant properties respective eternal objects of the distinct prehended data are abstracted from the data and transmuted or combined into a unit (nexus).

(b) Furthermore, the properties are valued with respect to the achievement of the subjective aim.

(c) It may be the case that the valuations of the data, as they were made by previous actual entities, are revised and that the same properties of the data are valued differently in respect to their processing function (conceptual reversion).

(3) In the completion phase (satisfaction) the subjective aim is achieved at best, i.e. that the processing of the data according to the subjective form is completed and the ideal of concrescence has been realized. Logically, the potential form of the actual entity in question has become a fully determined proposition the result of which (“superject”) in turn serves as an objective datum for further actual entities, i.e. it can then be objectified as one of their data.

Regarding the temporal aspect (and similarly the spatial aspect) of actual entities the following can be stated: Time is commonly measured in periods of a process, where for the sake of accuracy processes with smallest possible periods are chosen, whose durations are set to 1 by convention, i.e. the duration itself is not an object of time measurement. In this sense, the actual entities as atomic processes do not have any time phases themselves, but they may have systematic phases like the stages of the concrescence, which can be distinguished at the actual entities (see above). Whitehead calls these phases” *epochs*. The time flow is defined by the sequence of the epochs of actual entities which stand in *internal relation* to each other, as far as the one “grows out” of the other as shown above. Since time is thus discrete, paradoxes such as that of Achill and the turtle become obsolete.

If you look back to Figure 3, you can see that neurons can more or less be subsumed under the scheme of an actual entity. Neurons are therefore also suitable from a didactic point of view to exemplify and illustrate Whitehead’s terminology. First of all it must be stressed, that the neuron here may *not* be interpreted as material switching element, although in other contexts such interpretation has priority; here the neuron has to be understood as a *temporal process of a flow of data*, which starts with an “publicly given” input that is processed “privately” and ends with a “public” output in the sense of Whitehead’s *epoch* of an actual entity. Please note, that the Whiteheadian term “epoch” has a slightly different

meaning here than in Table 1 where the technical term “epoch” refers not to one single neuron but to one cycle through the full training dataset.

– A bit more precise: (1) in the first phase, the neuron receives a data input, which in turn comes from other neurons, except for the first (and last) layer, which is an interface to the supervisor (e.g. expert). Furthermore, in this phase the neuron receives also its program from a supervisor or a programmer – esp. its special threshold and its special type of activation function (out of a systematic ordering of such functions), determining the data flow with regard to a goal to be achieved: the analogy to Whitehead’s initial aim is obvious. Systematically speaking, the supervisor takes the position of Whitehead’s God here, insofar as he designs the programs of individual neurons and their interaction according to his ideas of an ideal to be achieved. (2) In the second phase the relevant properties of the data, which in the case of ANN are all numbers, are individually weighted, also by numbers. The weightings do not happen randomly, but are to be interpreted in a final sense as the result of a directed learning process (Table 1) in which the respective neuron participates. Then, the numerical values of the weighted data are summed up to a single value corresponding to Whitehead’s transmutation. At this place an interpretation of the notion “negative prehension” is possible, that is such a prehension, whose datum gets the weight 0 and thus is not included in further processing, thus has no influence to the output. You can also see that the activation function and the threshold/bias have a lot to do with what Whitehead calls a *decision*: they decide when the neuron fires, i.e. which of the output values should be generated by the neuron. In special cases it is conceivable that the activation function and the threshold/bias, which have been brought into play for the general case, may have to be replaced by others, i.e. that the previous program is revised, which is close to the *conceptual reversion* of Whitehead. (3) In the last phase the output data can be passed to other neurons as input data, or in the case of the final output to the supervisor that compares them with the ideal he has set.

– From a logical perspective in the sense of Whitehead, it is advisable to look at the formulas 2 and 6. Formula 2 is the most general expression for the uninterpreted proposition of a neuron; it quasi mirrors the complex eternal object, which defines the process, and in terms of its interpretations it can be understood as a general “lure for feeling” – as Whitehead puts it – towards its self-realization. Formula 6 shows this process of self-realization for the concrete case of an AND-neuron: the target/output ($o=1$) is realized by the neuron’s feelings or prehensions of the respective input data ($x_1=1, x_2=1$), as well as the conceptual prehensions, i.e. the activation function φ^{hlim} , the threshold = 1.5 and the weights $w_1 = 1.0, w_2 = 1.0$. Just as in the case of an actual entity the potential form of the neuron in question has become a fully determined proposition by this interpretation, result of which may serve as an input for further neurons or as final output.

b. Nexus and Networks

– A nexus is composed of actual entities that are connected (directly or indirectly) by internal relations, i.e. prehensions. For example, all actual entities, which lie in the “prehension-cone” of the past of a certain actual entity, form a nexus. However, those actual entities, which are

simultaneous with this particular actual entity, do not form a nexus by direct prehensions, but possibly via indirect prehensions mediated by past or future actual entities. Formally, a nexus can be understood as a directed graph, with the actual entities as nodes and the prehensions as edges. One could even tighten it to a weighted graph by assigning numerical values to the edges, which correspond to the valuations of prehensions by the actual entities. Graph theory is closely related to topology. In graph theory, a graph is a set of points (nodes), which may be connected by lines (edges). The shape of the points and lines is not important in graph theory. Topological structures are, so to speak, consciously charged with very specific contents and relations and are exactly defined by their logical connections. A topological structure offers the advantage to manipulate spatial objects in their mutual relations without knowledge of their coordinates. Topology, in turn, is closely related to the geometry and set theory from whose concepts it emerged. These few clues may be enough to show the path Whitehead took from prehensions through nexus and topological structures to geometry in PR (Michael Rahnfeld: From Nexus to Points, 11th International Whitehead Conference, Azores, 2017).

This can be transferred to ANN: the network in Figure 9 is an example of a nexus in Whitehead's sense; thus also an example for a directed graph. We find four layers of neurons ($a, b, c \dots$). The neurons within the layers are not connected directly to each other, so the processes taking place in them are simultaneous, and therefore cannot influence each other – so, they do not form sub-graphs. However, there are a lot of sub-graphs: for example, $N_1 = [a, b, c, e]$ and $N_2 = [a, b, c, f]$, where their union $N_3 = N_1 \cup N_2$ is also a directed graph, but not $N_3 = N_1 \cap N_2$ etc. One can already guess from this simple example that nexus of actual entities and graphs in ANN define both spatio-temporal *extensions* (Whitehead: *regions*) whose set-theoretic relations like union, section, complement etc. can be used for the construction of a topology and perhaps higher types of geometry.

One way leads Whitehead from the nexus to geometry, another to so-called *societies*. Just a few words: the simplest form of a society consists of a nexus of single actual entities in succession, which all represents the same properties (eternal objects, propositions) during a certain period of time. Whitehead calls such a society an *enduring object* or a *personally ordered society*. The nexus is distinguished by the fact that it always has the same character, and in this respect it corresponds to what is meant in Latin *persona*.

Our naive intuition of constant substances is due to the grouping of such enduring objects into a unit. In ANN a simple example of an enduring object is the iterative application (chain) of the NOT-function in Figure 7: $1 \rightarrow \text{NOT} \rightarrow 0 \rightarrow \text{NOT} \rightarrow 1 \dots$ Concerning the “public” (Whitehead: objective) output data this enduring object consists of the sequence of 1 and 0 (Whitehead: defining characteristic), concerning its “private” (Whitehead: formal) functions of a sequence of NOT-propositions.

A special kind of society is the *corpuscular society*, which consists of a multiplicity of enduring objects of the same type, such as in the view of substances a diamond consists of carbon atoms. In my opinion, this is adequately reflected in the application to ANN by the fact that in the range of Boolean functions, the NAND or NOR functions each form a base, i.e. any Boolean

function can be expressed by NAND or NOR functions alone. In a figurative sense one can say that they are the neuronal “atoms” for “corpuscular” Boolean networks (societies). The ANN, which represents the function of a so-called half adder, is an example of a corpuscular society in Whitehead’s sense, which consists solely of (chains of) NAND neurons, as shown in the sketch below. Here, all weights are set to -2 and the threshold/bias to 3.

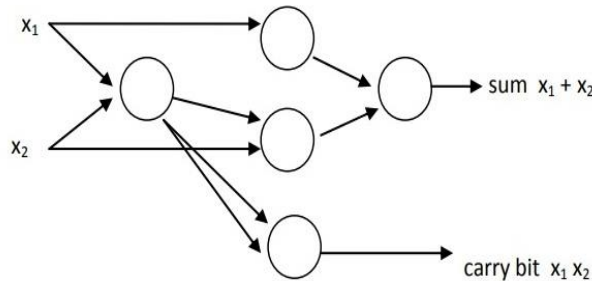


Figure 13 – Corpuscular society in the sketch

Another important type of society is the *structured society*. I am not sure whether this term, as Whitehead meant it, can be fully exemplified by ANN; nevertheless, at least partial aspects can be covered. Recall that Whitehead’s original focus was on the structure of the physical world: An electron or proton is a society of electronic or protonic occasions (actual entities). More specialized forms of social order incorporate electrons and protons into atoms, atoms into molecules, molecules into cells, and cells into bodies. In this way, a chain of complex societies results, and this means hierarchies of societies within societies. Whitehead calls such complex societies structured societies. In the world of ANN such hierarchies can partly be found, e.g. when in the image recognition of faces one layer is responsible for the recognition of the mouth, another for the recognition of the eyes etc. In order to convey this, a somewhat deeper introduction to ANN would be necessary, which I cannot provide here. However, in our tiny Boolean model world the following correspondence can be constructed: it shows a hierarchy of three neurons (NAND, OR, NAND), which together form the network for the XOR function. Metaphorically speaking, the XOR-function is an organism consisting of the organism of an AND-function, into which in turn, as organisms, the NAND and OR-functions enter. The hierarchical dependency of the parts on each other becomes clear if you write the Boolean expression for XOR as a tree, here with truth values $x_1=1$ and $x_2=0$.

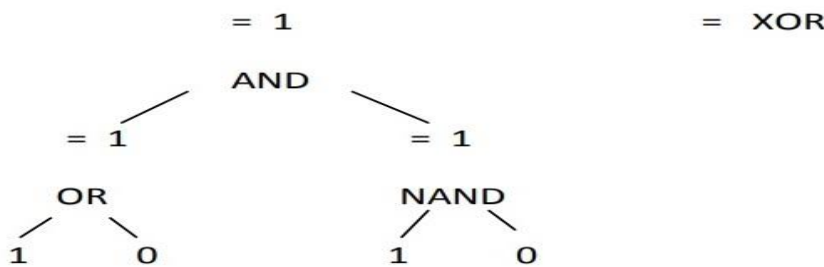


Figure 14 – Forms of society

In a similar way higher forms of society can be defined. The tendency is that modeling higher societies using simple means such as ANN becomes more difficult and less convincing the higher you go. Nevertheless, ANN appears to me in the discussion of nexus and its variants a valuable didactic tool to introduce Whitehead's ontology in precise and yet vivid terms.

c. God and the World

To make it clear from the beginning: The remarkable difference between Whitehead's physical nexus and the artificial and natural networks is that all nexus form a single overall nexus called the world or universe, whereas networks do not form a complete network, just as all brains do not form a single brain. Accordingly, for Whitehead there is a single world and thus a single god, but on the other side there are many networks and their supervisors. The following reflections on "God and the World" are therefore only of *local* significance in the case of ANN, whereas Whitehead's claim is *global*, which is more compatible with traditional concepts of God and therefore allows for a better theological bridge-building than ANN. Nevertheless, as we will see, the reflection on ANN does give rise to theological association.

First to Whitehead: Whitehead's "ontological principle" postulating that all features in the universe derive from actual entities, presupposes the existence of a *unique* actual entity as primordial source and carrier of the conceptual framework conditions of the universe. Whitehead terms this entity "the primordial nature of God". God does not act as the creator and executor of the universe, but assumes the metaphysical task of substantiating abstract conceptual forms and their potential orders. In regard to Whitehead, the abstract objects comprise essentially: (1) the "eternal objects" and their compositions entering into (2) the initial/subjective aims of actual entities as conceptual and propositional prehensions, and (3) the subjective forms of prehension.

God is not only a static metaphysical framework, but even more an active principle: to hold – with Whitehead – that God values all eternal objects "in their relevance for particular actualization" implies in God an activity of selection, and also an "urge towards realization of the datum conceptually prehended" and "maximum realization of value", to be understood primarily as esthetic "intensity" in terms of "balanced complexity" or "harmonic contrasts". Also, there is free space for "causa sui" – that means that God has not the capacity to impose his selection upon the actual entities forcibly, but by "lure" or "persuasion" which an actual entity may follow or not, depending on the self-determined aim of its "concrecence. In this context, the problem of the activity of God being able to perform miracles in spite of his own omniscience is discussed (Halapsis).

Besides his primordial nature, God has a "subsequent nature", prehending and valuating the actual state of the entire universe and hence of each actual entity at a time in the light of his primordial nature. According to his global subjective aim, he is updating the initial aims for all actual entities and he does so permanently, because it is up to the "creativity" of each actual entity to accept His decisions or not so that the future evolution is determined only with some probability and demands subsequent improvements by God. In this sense it is questionable whether God as an actual entity ever enters the last phase of satisfaction; for, if he entered into it, he would then have finally achieved his "subjective aim": the world would then be in a stable state of divine order which

probably contradicts the individual degrees of freedom of the actual entities.

One might demand at this point the function of God to be replaced by a scientifically sound evolutionary mechanism to avoid unnecessary mystifications. However, Whitehead emphasizes expressly in *Function of Reason* that in his view the evident upward tendency via “intensity” in nature can only be explained by existence of an element of finality, a “reason” or “counter-agency” against decay beyond physical and chemical mechanisms, whatever one may choose to call it.

Now let’s make the comparison to the ANN: In analogy to Whitehead’s ontological principle, the neurons as well as the actual entities form the substance or the basic building blocks (atoms) for the world of an ANN, so that all further principles etc. are based on them. In analogy to Whitehead’s ontological principle, the neurons form the substance or the basic building blocks for the world of an ANN, so that all further principles or considerations etc. are based on them. This substance does not owe its existence to the supervisor, who controls the learning process, but is given to him. Like Whitehead’s God, he is not the creator, but the controller and coordinator of the world, who sets an ideal to be learned for certain input value, selected by him. In the sense of God’s “primordial nature”, the supervisor has access to a setup of a priori given concepts, such as a set of activation functions or special parameters for the learning rules etc. and in full accordance with God’s “subsequent nature” he compares (via the applied learning rule) the actual outputs with the ideal in order to re-adjust the individual weights and maybe also other parameters. Both Whitehead’s world and ANN move in a kind of loop (Figure 11) that leads from a constant comparison of reality and ideality to a gradual improvement of the world.

Conclusions. With regard to the set ideal, there are clear differences between Whitehead and ANN, inasmuch as in the case of the ANN it is exclusively a matter of learning as precisely and efficiently as possible about a given goal, whatever it may be, whereas Whitehead is concerned with an aesthetic intensification of the contrasts of the global nexus. The stepwise adjustment of the neuron weights is only an expression of the learning progress without any further aspects. Let us take Figure 9 as an example: for Whitehead, the overall distribution of weights as an expression of aesthetic harmony would be decisive for the quality of the nexus, e.g. on the basis of an entropy measure, but this does not play any role at all for the quality of the ANN, which is measured solely by its ability to learn. Furthermore, terms like self-determination or self-realization do not matter for neurons in contrast to actual entities. But this is also a fundamental problem for Whitehead himself, since there is no meaningful application of these terms in the field of elementary processes; rather, they seem to be reserved for higher entities.

As already mentioned, the supervisor can be a so-called *expert* or *nature* can select the actual outputs with regard to the optimal target output. The idea that nature itself controls the learning process boils down to *pantheism* or *atheism* from a theological point of view; for beyond nature no other control mechanism is brought into play. Thus there is no personal or personified God here. If, on the other hand, one assumes some kind of expert, which obviously corresponds to Whitehead’s view, there is an entity different from the ANN, which the ANN intentionally uses for its purposes. This view leads to *pantheism*, insofar as ANN is part of the world of the expert, but is different from him and is

not arbitrarily manipulated by him in terms of its existence and functioning. It makes sense to reduce the concept of the expert not only to its systematic functions, but to include in it further human qualities, which could bring him close to a personal God, if so desired. In my opinion, which of the alternatives is to be preferred cannot be decided a priori, but emerges from the overall context in which we stand and argue. It is difficult to make last words here.

Finally, a word about Whitehead's basic "Category of the Ultimate". This term comprises three components: *creativity*, *many* and *one*. This is to express the basic feature of Whitehead's ontology, according to which the world constitutes a disjunctively diverse *many* which enter into a complex unity. The novel *one* is the *creation* emerging from this concrescence, and is disjunctively diverse from the units it has unified. Mutatis mutandis the same applies to the data flow of neurons, as already shown: In a new neuron data is inherited, redesigned and supplied to subsequent neuronal processes etc. In a broader sense, creativity is inevitable in the processes of ANN as the following consideration shows: If the steps of the learning rates (Formula 7) are too large, the convergence of the error function is no longer guaranteed; if the steps are too small, the number of necessary training runs can become very large. When adjusting the weights, it can unfortunately happen that the optimization gets stuck in a so-called local minimum. Also the repetition of the method with changing, randomly distributed initial values of the weights does not always leads to a solution, since often an astronomically high number of local minima exists. In other words, the loop in Figure 11 never ends positively and therefore the initial parameters (weights, thresholds, activation functions) must be selected again. The need to overcome these and other difficulties has led to a large number of different and very specific solutions. But there is no satisfying solution on all sides. It is therefore possible that the ideal aimed for by the expert cannot be achieved due to unfavorable circumstances, although it would be possible in principle. If the ANN is put into analogy with the world and the expert with God, this means that neither the expert nor God is omnipotent and omniscient within the limits of what is actually possible; they cannot, so to speak, *force the ideal*. At best, they can do it by tentative experimentation, whereby a final solution cannot be expected for all cases. If one follows what is generally accepted as the definition of creativity, according to which creativity is the ability to create something that is new or original and at the same time useful or usable, then one can say that Whitehead's God as well as the expert in the creation of ever new nexus or networks to achieve the set ideals are in a constant creative process. Very metaphorically speaking, they are artists and not dictators.

Conflict of Interest and other Ethics Statements

The author declare no conflict of interest.

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Майкл Ранфельд

НЕЙРОНИ, МЕРЕЖИ ТА НЕКСУСИ

Анотація. В статті обговорюються проблеми розвитку штучних нейронних мереж (ШНМ) в контексті методології А.Н. Вайтгеда. Ідея про те, що сама природа контролює процес навчання, зводиться до пантеїзму чи атеїзму з теологічної точки зору; бо поза природою жоден інший механізм контролю не задіяний. З іншого боку, якщо припустити існування якогось експерта, є сутність, відмінна від ШНМ. Має сенс звести поняття експерта не лише до його систематичних функцій, а й включити в нього додаткові людські якості, які при бажанні могли б наблизити його до особистого Бога.

Стаття присвячена розгляду програмних можливостей коннекціонізму для процесного мислення. Автор доводить, що між концепцією Вайтгеда і ШНМ є чіткі відмінності, оскільки у випадку ШНМ йдеться виключно про якомога точніше й ефективніше вивчення певної мети, якою б вона не була, тоді як Вайтгед займається естетичною інтенсифікацією контрастів глобального зв'язку. Поетапне регулювання ваг нейронів є лише виразом прогресу навчання без будь-яких додаткових аспектів. Для Вайтгеда загальний розподіл ваги як вираз естетичної гармонії мав би вирішальне значення для якості зв'язку, наприклад, на основі міри ентропії, але це не відіграє жодної ролі для якості ШНМ, яка вимірюється виключно її здатністю до навчання. Крім того, самовизначення або самореалізація не мають значення для нейронів на відміну від реальних сутностей. Але це також є фундаментальною проблемою для самого Вайтгеда, оскільки немає змістовного застосування цих термінів у сфері елементарних процесів.

Наголошено, що основною рисою онтології Вайтгеда є те, що світ являє собою диз'юнктивно різноманітну безліч, яка вступає у складну єдність. Те саме стосується потоку даних нейронів: у новому нейроні дані успадковуються, переробляються та надходять у наступні нейронні процеси тощо. У більш широкому сенсі, творчість неминуча в процесах ШНМ, оскільки якщо швидкість навчання занадто велика, збіжність функції помилки більше не гарантується; якщо швидкість занадто мала, кількість необхідних тренувальних пробіжок може стати дуже великою. Під час коригування ваг може статися так, що оптимізація застрягне в локальному мінімумі.

Ключові слова: *штучні нейронні мережі, Вайтгед, коннекціонізм.*

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PASSENGER TRANSPORT HUBS: THEMATIC OVERVIEW

Abstract. We consider in the study that many scientists from different countries in their studies have paid attention to the organization of multimodal passenger transport. Some focused on building a smart city with convenient transport infrastructure and interchanges, while others focused not only on locals but also on tourists. Methods and methods of research were to varying degrees and the same and different. But we can say that the common feature of their research is that all research is aimed at improving the basic service provided to passengers – transportation. Attention is also paid to additional related services, and potential benefits to investors and some other issues. Passenger rail transport brings significant public benefits in the form of rapid movement, reduction of congestion on the roads, reduction of environmental pollution.

The article has investigated in which way at the present stage of economic development

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a key role in the effective functioning of the passenger complex of railway transport is played by the construction of modern transport interchanges – HUBs, which will provide interaction between railway carriers and other participants in the passenger industry. The article states that the mechanism developed by scientists for the implementation of multimodal passenger transport by rail in cooperation with other participants in the service process and the model of institutional support for the development of multimodal passenger transport by rail should be used in different countries.

Keywords: *multimodal transportations, HUBs, passenger transportations, railway transport, tourist transportations*

Introduction. According to the transport White Paper “better modal choices will result from greater integration of the modal networks: airports, ports, railway, metro and bus stations, should increasingly be linked and transformed into multimodal connection platforms for passengers”.

The purpose of the article is to make a thematic review of research by world scientists on the implementation of transport hubs in their countries.

Analysis of recent research and publications. Some scientists write about the transport problems of their country, suggest ways to solve them. Thus, a scientist from Indonesia, considering the modes of transport that are most used by the local population, found that the greatest demand is for water transport. Most passengers use river transport to get to work and home. It is necessary to take into account the fact that in order to get to the place of work, passengers need to use not only river, but also road or rail transport. At the same time, the infrastructure of other modes of transport, such as road transport, is in a deplorable state. The author assessed the level of connectivity between the transport infrastructures of the region, and also developed recommendations on the level of service of the existing transport infrastructure, which should meet the minimum standards (Said, 2015).

Scholars from India describe India’s public transport system as underdeveloped in most Indian cities. Lack of developed transport infrastructure and convenient transport links between cities is one of the main problems in this area.

Cities lack infrastructure for the creation of physical integration between the modes of transport. The transit services introduced at different point of time are designed in such a way that it becomes challenging to design facilities for vehicle pick-up and drop-off points, auto-rickshaw stands, parking spaces, and Foot Over Bridges to access transit stops/stations. The retrofitting to the existing facilities incurs a high cost of infrastructure. Construction of infrastructure like sky walks, foot over bridge, redesigning of urban roads and provision of continuous footpaths will help to design a physically integrated multimodal transport system.

City bus service provider operates the public transport in urban areas of Indian cities along with the multiple private operators. The para-transit mode of transport competes with the city’s standard mode of public transport. The private and para-transit operators’ unwillingness to formalize their operations with the city bus/metro/sub-urban rail services is the significant barrier to an operationally integrated multimodal transport system in Indian cities (Arora et al., 2016).

Some scientists write about the need for “smart transport systems” to ensure the safety of passengers. Many scientists from around the world have paid attention to the planning of both the transport hubs themselves and the

forecast of passenger traffic. For example, scientists from Russia in their study point out that the rapid growth of different types of vehicles requires the construction of intelligent transport systems. The global transport system, consisting of heterogeneous transport flows, is in dire need of intellectualization of vehicles and transport infrastructure to ensure their effective management and improve the quality of transport services. The authors write that the creation of a cognitive multimodal transport system will not only significantly reduce the average time of passenger transport, but also increase safety (Komashinskiy et al., 2020).

Researchers from Spain rightly point out that tourism is developing rapidly and as a result the needs of tourists are growing, and therefore the tourism industry needs more and more innovation. Researchers on the example of the Spanish city of Gandia suggest making other cities of interest to tourists “smart”, ie, increase the mobility of the population, align transport infrastructure with existing attractions and places of recreation (Sigalat-Signe et al., 2020).

Policy measures like “Development of regulatory framework for routes operation of IPT system” and “integration of IPT with PT system based on the passenger demand” may help cities to achieve operationally integrated multimodal transport system. Inclusive integration of urban transport and land use planning systems is needed so that cooperation and coordination among different agencies is harnessed. Interconnections need to be promoted and functionality of urban transport system can be improved through multimodal mobility solutions for Indian cities.

The authors from India suggests that integrated multimodal transport systems in Indian cities can only be evolved when enthusiastic, united, and involved institutions are formed and permitted through clear responsibilities, lawmaking authority, monetary independence, and proficient competence. This will eventually enhance the accessibility and mobility of Indian cities (Dawda et al., 2021).

Scientists from France have developed A Hybrid-Dynamical Model for Passenger-flow in Transportation Systems, which is intended as a building block for obtaining supervisory control, via transport operator actions, to mitigate congestion (S. Haar, & S. Theissing, 2015).

A study by French researchers has developed a utility model for the organization of multimodal passenger transport, which allows to take into account the two most important flows: passengers and vehicles (J. Lebacque, & M. Khoshyaran, 2018).

The study presents scientists from Latvia a comprehensive analysis of the planned multimodal public transportation HUB. The authors offered the way the authorities could move the urban transportation system to sustainability and to study a particular aspect of decisions on the passenger planning network in the city of Riga in the frame of the Rail Baltic project – Riga Central Multimodal Public Transportation HUB. The main question in this case study – how multi-modal transportation planning requires evaluation of factors affecting accessibility and how they are currently considered in planning (A comprehensive analysis of the planned multimodal public transportation HUB. 3rd Conference on Sustainable Urban Mobility, 3rd CSUM 2016, 26-27 May, 2016).

The authors from USA analyzing the Potential for High-speed Rail as Part of the Multimodal Transportation System in the United States' Midwest Corridor. Only the maximum utility path for each mode (road, passenger train, and commercial air) is used in the discrete choice model. This assumption implies that the user focus is on the mode choice and not a route choice. A multinomial logit (MNL) model is used to determine the ridership distribution on each mode. The authors develops a systematic model (LUCIM) which provides robust predictions of long-term modal ridership shares due to sensitivities to economic, demographic, and technological trends. The model is validated against actual data at a systemwide level and reasonably captures ridership responses to evolving exogenous stimuli such as fuel prices. This provides planners and policymakers with a robust, systematic methodology for analyzing the viability of a proposed HSR network over the long term. Experimental results show that if operational characteristics were improved to match that of air service in terms of frequency, comfort, etc., HSR has the potential to see ridership on the order of 50 to 60 million riders annually. Furthermore, the results demonstrate that there will be a continual ridership shift to passenger train as fuel costs increase for the alternative modes in the long-run until there reaches a point when vehicle efficiency can offset these costs (Peter et al., 2014).

Formulation of the main material. The researchers from Romania say that the problem of reducing the transit time through these intermodal terminals is the key in making the public transport more attractive; the way the terminals are designed and organized leads to their intensive use or not. Their paper presents a model for designing intermodal passenger terminals that encourage modal transfer. The model's framework suppose the correlation of the transport modes timetables, placing the platforms so that the movements between them are as small as possible, tariff integration and the use of an unique ticket, etc. (Roşca et al., 2020).

The authors from Portugal present the assessing multimodal mobility trends using heterogeneous data sources. The authors proposes integrated autoregressive models and moving averages for series with seasonality were successful in the prediction of passenger flows using time-series data gathered by the regional authority from transport operators and other entities.

The main research questions can be described as follows: What mobility patterns are observed in the various transport modes in the Algarve region? What trends can be expected in the coming years? The focus of the authors is made on prediction models estimated for the case of regional collective transport (bus and rail) and road traffic only (Arsenio, 2019).

The authors from China describe tree big HUBs: Lanzhou, Ningbo and Chongqing rail station in China. Besides high – speed rail, a transport HUB usually integrates other transport modes including subway, bus, taxicab, and even flight. The transport HUB is usually regarded as an important “city flagship”, where passengers and cargo are exchanged between multiple transport modes. Therefore, according to the routine passenger volume, the associated service facilities are also developed around the transport HUB. While focusing on the high – speed rail station, the design of the transport HUB should consider incorporating urban renewal, connecting underground and ground transportations; and fusing high – speed rail, subway, and ground

transportations. On the basis of the concept “zero transport interchange” and “seamless linkage”, utilizing and developing underground space in transport hub will maximize the social benefit. As development of high – speed rail network, besides Beijing, Shanghai, Guangzhou, and Shenzhen, the other major cities in China are constructing transport HUBs centered around high – speed rail station. The underground space development in transport hub has many benefits such as maximize the land use efficiency; optimize the layout of various facilities; increase the transport interchange efficiency; improve the ground environment; enhance the connection of split urban areas by railway; foster a convenient and comfortable travel experience; improve the functionality of transportation HUB and benefit the society. The researches propose an Passenger Transportation Structure Optimization Model Based on User Optimum in the premise of meeting the demand of regional passenger transportation was put forward. From the perspective of user optimum, combined with cost, time, safety, comfort and convenience of passengers, the generalized cost function is established (Y. Ma, & Yu. Gao, 2016).

As say the researches from Spain, there is a need for integration in order to achieve effective seamless mobility. One dimension of integration is to reduce the disruption of transfer among modes and interchanges appear as the best solution when big number of travellers has to transfer. The City-HUB 7FP project¹ has developed a three years research for deploying new interchanges and improving existing ones. It starts by identifying two groups of dimensions that define Interchange key features. The first dimension is related to Physical&Size, including passenger demand, modes of transport, services and facilities and location in the city. The second dimension is related to Local Impacts such as developing of new activities – housing, offices, nearby shopping-, jobs creation and its connection with the local Development Plan. The combination of the elements of the two dimensions define the following key features: building design, stakeholders’ involvement and the type of business model. The authors says that the key identified factors for passengers or tourists were: Information, Transfer conditions, Safety & Security, Emergency situations, Design & Image, Environmental quality, Services & Facilities, and Comfort of waiting time. These factors define an efficient transport interchange (i.e. an interchange competitive and, at the same time, attractive for users), considering them not only “as nodes” within the transport network, but also “as places”. Factors that better define an interchange “as a transport node” are aspects related to information provision – travel information and signposting – and transfer conditions – distances and coordination between operators. In contrast, design & image, indoor environmental quality, services & facilities and elements addressed to improve the comfort of waiting time are directly linked the quality of the interchange “as a place”. The recommendation from the City-HUB Model is to involve all stakeholders in the earliest stage of an interchange building or refurbishment project. Consideration should be given to the needs of different stakeholders, especially interchange users, with potential conflicts discussed and mitigated early in the planning or development process. According to these key features, the interchange should organize the space among three different zones: access-egress zone; facilities zone; and arrival-departure-transfer zone (Monzón et al., 2016).

Key factors identified to make urban transport interchanges attractive for users (S. Hernandez, & A. Monzon, 2016).

The authors from Latvia propose a methodology for multimodal transport management support systems development. The proposed methodology includes three subsystems: transport traffic control support system, transport cruising time synchronization system, and user support system (A. Bolkovska, & J. Petuhova, 2017).

The authors was employed the probability theory with principal component analysis to create a new indicator based on both demand (modal shares) and supply (monetary investment for each mode). The indicator offers three main benefits in the area of performance measurement: it is applicable in cases when some data are missing; it provides a way of comparing multimodality from diverse projects such as high-occupancy toll lanes or multimodal centers; and it can help decision-makers quantify how multimodality has changed over time (C. Lee, & J. Miller, 2017).

Consumers' valuation of bundling and service integration was calculated. Several discrete choice experiments were conducted to indirectly estimate consumers' WTP for stand-alone transportation services and service bundles. Consequently, subscription-based pure bundles for all transportation modes may not be the optimal strategy for mobility providers. A model is proposed to optimize coastal transportation sustainability policy. The model can optimize the shipping network design policy and toll policy. A coastal container multimodal transportation system has two modes of transportation, i.e., land and water. Due to economies of scale, the latter has become an emerging way to decrease the pollution of the system. This paper establishes a programming model to improve the system's sustainable transportation policy. The model aims to minimize the carbon dioxide emissions (Guidon et al., 2020).

The authors determines a Pareto-improving pricing scheme for alleviating congestion in a multimodal transportation network that includes, e.g., transit services, high-occupancy/toll and general-purpose lanes. In this setting, a pricing scheme refers to a strategy for tolling roads and highways as well as adjusting fares on various transit lines. In addition, such a scheme is Pareto-improving if it maximizes the social benefit without increasing travel-related expense of stakeholders that include individual road users, transit passengers, transit operators, transportation authorities, etc. The user equilibrium and system optimum problem in the multimodal transportation network are discussed along with a model for determining Pareto-improving tolls (Wu et al., 2011).

Recent advances in the network-level traffic flow modeling provide an efficient tool for analyzing traffic performance of large-scale networks. A relationship between density and flow at the network level is developed and widely studied, namely the macroscopic fundamental diagram (MFD). The authors propose a novel algorithm for partitioning bimodal network considering the homogeneous distribution of link-level car speeds and bus speeds. The authors propose an algorithm to estimate alighting passenger flow and passenger density on bus, by fusing smart card data (i.e. records for boarding passengers) and bus GPS data. They analyze the complexities of passenger flow and the impact of weather on traffic demand and bus

occupancy. The results provide an empirical knowledge on multimodal traffic performance with respect to passenger flow (Fu et al., 2020).

Efficient multimodal public transport has been recognized as an effective solution for realizing sustainable intercity transport. But now there is the poor coordination among transport modes, inconvenience caused by transfers, difficulties on route planning, etc. So to address the problem and facilitate the popularity of multimodal intercity travel, researches proposed the design of personalized multimodal travel service based on SPSS (Smart Product Service System). The influencing factors of multimodal intercity travel is investigated, based on which the travel choice model is developed (Xu et al., 2021).

Urban rail transit (URT) provides efficient and low-cost services for passengers. It is a common issue for operators to coordinate the last trains of a URT network. This paper discusses three models in a progressive fashion to optimize the last train timetable incorporating multimodal coordination. The first model maximizes the transferability at transfer stations without the distinction of the stations. The second model, based on a refined classification of stations and lines, optimizes the transferability at transfer stations between different transport modes. The third model maximizes the multimodal coordination taking into account the space-time distribution of the arrivals and departures of the connecting modes. The proposed models are tested in the Beijing URT network connecting three railway stations and two airport terminals. The proposed models can effectively improve the coordination among the last trains within the URT network and between the URT and the connecting modes (Huang et al., 2021).

The authors presents a case study of stakeholder engagement in transportation decision making pertaining to decisions of investments in passenger rail and state and local fund allocation, using a focus group approach. The findings verify that stakeholder involvement can provide states and other decision-makers with valuable insights on several topics supporting future policy and funding decisions. For example, in the case explored, the engagement of the stakeholders revealed that public investments towards the continuation and potentially improvement of the intercity passenger rail services are in line with the communities' goals and are viewed as more beneficial than alternative transportation investments that can enable mobility in the area. In addition, the findings suggest that the benefits of engaging stakeholders in transportation decision making go beyond the act of gathering stakeholders' input; focus groups or similar dynamic forums can facilitate the production of innovative ideas and shared knowledge while fostering collegiality among stakeholders. Overall, the case study results indicate that stakeholder engagement can benefit smaller-size projects and/or broader policy and planning decision making, such as decisions involving the financing of an intercity passenger rail line and investment directions towards operational changes of the line and/or alternative transportation modes and infrastructure (Pyrialakou et al., 2019).

To increase the understanding of passenger choice of air-rail integrated services, the authors analyzes the profile of intermodal passengers by classifying them based on their socioeconomic and travel characteristics and uncovers any heterogeneity in passenger satisfaction

with ARIS among different passenger groups. Through collecting 1.345 passenger satisfaction questionnaires about ARIS, surveyed in Shijiazhuang, China, they first apply latent class clustering to classify passengers into three groups. The results show that the three passenger groups attach similar importance to ticket services, reliability, accessibility and comfort, while some noticeable differences in perception are identified in personalized services, information services, and connectivity (Feng et al., 2021).

A hierarchical network and traffic assignment model is developed for multimodal transportation networks to meet the prediction of large-scale transportation demand in this paper. In the proposed model, the city center and transportation terminal of different modes are defined as central nodes and transfer nodes respectively to characterize travel behavior of passengers. The generalized cost function and route choice algorithm are also correspondingly improved to suit the proposed model. A computer-aided demand model is also developed to efficiently attain the analysis results for large-scale transportation networks. The applicability and availability of the demand model is illustrated by the case studies over Jing-Hu high speed railway in China (Hongqin et al., 2009).

The author aims to extend the concept of macroscopic fundamental diagram (MFD) to combine different transportation modes. Especially, he proposes a unified relationship that accounts for cars and buses because the classical MFD is not sufficient to capture the traffic flow interactions of a multimodal traffic. The concept of passenger macroscopic fundamental diagram is introduced. With this new relationship, the efficiency of the global transport system, i.e. behaviors of cars and buses, can be assessed. Thus, user equilibrium and system optimum are studied and compared. Finally, this relationship is used to design bus system characteristics and to identify the optimal domains of applications for different transit strategies (N. Chiabaut, 2015).

The authors investigate influential factors in passengers' intercity multimodal choice behaviors in a touristy city. By collecting large individual-level data through a comprehensive field survey that was carried out at the major transportation hubs in Xi'an, China, they studied four travel modes of the surveyed travelers in this touristy city, including air, high-speed rail, traditional passenger train, and express bus. The results indicate that those factors have significant and various influences on passengers' mode choices: travel distance, fare rate, intercity travel time per hundred kilometers, quality of service, accessibility of transportation hubs, and ticketing methods have influential contributions for explaining the choice decision-makings (Li et al., 2020).

Based on data of 286 Chinese cities from 2006 to 2015, the paper applies Difference-in-Difference model to investigate whether and how High-Speed Railway (HSR) influences the tourist arrivals. Empirical results suggest that HSR opening can significantly promote tourist arrivals; the positive effects of HSR opening on tourist arrivals increase gradually; improving HSR frequency helps cities to attract more tourists; the location of HSR station has no significant impact on tourist arrivals (Deng et al., 2020).

The authors analyze the impact of High Speed Rail (HSR) on the tourism market. The original and added value of this contribution is in the proposed methodology, which considers the Geographically Weighted Regression technique, incorporated within a Poisson model. This approach allows measuring

the relationship between independent and dependent variables with respect to space. The case study comprises 99 Italian provinces, analyzed in the time period 2006 – 2016. The main outcome of the analysis is that HSR affects tourists' choices of a given destination (F. Pagliara, & F. Mauriello, 2020).

The authors write that passengers with different personal and travel characteristics have different perceptions of integrated transport. Based on passengers' travel experience, this paper establishes a conceptual framework of multimodal integration that considers nine categories of interchange performance indicators at three different levels of the "integration ladder". This framework is illustrated by a case study of Shanghai Hongqiao Comprehensive Transport Hub in China, to identify the main barriers of multimodal integration inside the hub from a people-centered perspective. On one hand, observational survey was conducted to record the indicators about interchange facilities provision; on the other hand, 603 questionnaires were collected to reflect the passengers' perception of interchange services. Both surveys show that the lowest level of information integration has been achieved in this hub, but the moderate level of facilities and services integration and the highest level of ticketing and fare integration are still limited. Further improvement is expected with respect to multimodal services and ticketing, such as time coordination, luggage delivery facilities, through ticketing and interchange discount. Moreover, for people with different personal and travel characteristics, their perceptions of multimodal integration have some differences, which suggest that the design, operation, and management of urban transport hubs should be people-centered in the future (L. Li, & B. Loo, 2016).

In rural regions, public transportation is often characterized by low accessibility as well as long waiting and travel times. In order to improve rural transportation systems, public decision-makers intend to implement alternative on-demand mobility modes. Herein, new intermodal travel itineraries with transfers at multimodal mobility hubs may enable faster public connections and thereby strengthen public transportation. Against this background, we present a decision support tool for locating multimodal mobility hubs to improve intermodal accessibility. As objectives, we aim at maximizing accessibility to workplaces and to places of private need. Our model decides on locations of multimodal mobility hubs and on the available on-demand mobility modes offered in addition to existing public transportation. We develop our model in an agile process together with rural decision-makers in the district of Heinsberg, Germany, and apply it in a real-world case study. As input for our model, we account for the existing public transportation system, identify points-of-interest, and estimate commuting volumes to workplaces based on official commuting data. Results promise a high potential to improve accessibility in rural areas. However, most of the improvement stems from unimodal car sharing trips (Frank et al., 2021).

Scientists from China conducted a large-scale study, focusing on the issue of ease of navigation for passengers in the transport HUB. They drew attention to the fact that thousands of passengers see a huge amount of information every day and a very important point is what exactly tourists see first, as well as how quickly they can find the information they are interested in (Xu et al., 2020)

Scientists from Colombia have done a thorough review of publications on the construction of HABs. Intermodal transportation plays a key role in modern transportation systems. There is a high interest into design efficient and low-cost intermodal networks. They review more than 100 papers on recent literature regarding intermodal network design from a hub location perspective. They found that current models lack of realism in the modeling of internal factors of intermodal hub networks like hubs and vehicles They had reviewed the recent literature on intermodal hub network design from the perspective of hub location theory. They emphasize on aspects that make models more realistic and on the applications on container transportation. But their research concerns freight, not passenger, so we will not dwell on it in detail (Basallo-Triana et al., 2021).

Conclusions. Many scientists from different countries in their research have paid attention to the organization of multimodal passenger transport. Some focused on building a smart city with convenient transport infrastructure and interchanges, while others focused not only on locals but also on tourists. Methods and methods of research were to varying degrees and the same and different. But we can say that the common feature of their research is that all research is aimed at improving the basic service provided to passengers – transportation. Attention is also paid to additional related services, and potential benefits to investors and some other issues.

Conflict of Interest and other Ethics Statements

The authors declare no conflict of interest.

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ПАСАЖИРСЬКІ ТРАНСПОРТНІ ХАБи: ТЕМАТИЧНИЙ ОГЛЯД

Анотація. Багато вчених з різних країн у своїх дослідженнях приділили увагу організації мультимодальних пасажирських перевезень. Деякі з них зосереджували увагу на побудові розумного міста зі зручною транспортною інфраструктурою та розв'язкою, інші орієнтувалися не тільки на місцевих мешканців, а й на туристів. Методи та способи дослідження були в різній мірі і однаковими, і різним. Але можна сказати, що спільною рисою їх досліджень є те, що всі дослідження спрямовані на покращення основної послуги, що надається пасажиром – перевезення. Увага приділяється також і додатковим супутнім послугам, і потенційним вигодам інвесторів та деяким іншим питанням. Пасажирський залізничний транспорт приносить значні суспільні блага у вигляді швидкого переміщення, скорочення кількості заторів на дорогах, зменшення забруднення навколишнього середовища. Керівництво розвинених країн інвестують значні кошти в розвиток мережі пасажирських залізничних перевезень, але залізниці не однаково розвинуті у всіх країнах світу, а деяким з них, потрібно багато зробити, щоб досягти європейського рівня. Наголошено, що прогресивним напрямом модернізації інфраструктури пасажирського комплексу залізничного транспорту є процеси формування мультимодальних комплексів за рахунок створення в країні системи залізничних пасажирських ХАБів. Авторами проаналізовано дослідження провідних вчених світу з питань запровадження транспортних пасажирських вузлів або ХАБів в їхніх країнах.

На сучасному етапі економічного розвитку ключову роль у ефективному функціонуванні пасажирського комплексу залізничного транспорту відіграє будівництво сучасних транспортно-пересадочних вузлів – ХАБів, які забезпечать взаємодію між залізничними перевізниками та іншими учасниками індустрії пасажирських перевезень, що дозволить оптимізувати сервіс і надати пасажиром комфортний пакет мультимодальних послуг. Визначено, що розроблений науковцями механізм реалізації мультимодальних перевезень пасажирів залізничним транспорту у взаємодії з іншими учасниками процесу сервісного обслуговування та модель інституціонального забезпечення розвитку мультимодальних пасажирських перевезень залізничним транспортом доцільно використовувати в різних країнах.

Ключові слова: мультимодальні перевезення, ХАБи, пасажирські перевезення, залізничний транспорт, туристичні перевезення

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PERSONNEL IN TOURISM INDUSTRY OF UKRAINE AS A MEANS TO ACHIEVE COMPETITIVE ADVANTAGE

Abstract. In the context of globalization of the tourism industry, the organization of personnel management and the efficiency of its use require more and more attention, as personnel is the main resource of tourism business enterprises. The competitiveness and performance of tourism enterprises directly depend on the effectiveness of personnel management, namely on its objective assessment and proper distribution of competencies, which reflect not only the professional level but also the business and personal qualities of tourism employees. Personnel evaluation is considered as an element of management and certification of personnel used in the tourism industry, as a necessary tool for studying the quality of staff, its strengths, and weaknesses. Any assessment is the result of a comparison of a facility with certain standards, regulatory requirements, well-known parameters, and staff assessment is no exception. In the proposed approach, personnel evaluation involves comparing certain competencies of employees with the relevant reference requirements of the position held or claimed by an object of evaluation. The essence of the evaluation proposed in the article is that for each position in the tourism industry it is possible to develop a reference version of competencies, through which, after the evaluation, management makes an informed management decision, namely to train, develop, motivate or release the object of evaluation. Training is appropriate if there is a lack of knowledge, skills, and abilities; it is necessary to develop when there are basic skills and it is necessary to reveal potential; motivate, if the necessary set of knowledge and skills is available, but not used to the full extent; and an employee is fired in the event that education and training are impractical. The article proposes an approach to solving the problem of objective evaluation of tourism industry personnel. The above approach is aimed at obtaining detailed information about how a certain employee shows his professional and personal qualities and how they correspond to the position. The proposed approach is based on the theoretical and methodological instruments of the method of alternative characteristics and scoring system.

Keywords: *personnel evaluation, weighted evaluation, competencies, Google forms, online surveys, customer orientation, loyalty.*

Introduction. Proper selection of staff mainly affects the implementation of the strategy of any organization in the tourism industry and to ensure that employees feel good at work place that corresponds to their abilities and capabilities. Currently, performance score is becoming one of the main tools for the formation and development of the work team, so deep knowledge and skills in this area is one of the main components of the leadership style of a

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modern manager. To make leaders manage employees better according to evaluation results and use them more effectively, the evaluation of organization personnel should be conducted regularly and according to all the qualities of subordinates or candidates for the position. Thus, the study proposes a method to evaluate personnel of the tourism industry which will use the scoring system to evaluate not only the level of qualification, which is determined by the ability to perform certain material operations, but also competencies which are considered as a set of skills inherent in each individual, i.e. his/her personal qualities.

The purpose of the article is to develop a model for determining the weighted evaluation of tourism industry personnel according to the reference version of the necessary competencies for different positions.

Analysis of recent research and publications. The study of the personnel evaluation system of an enterprise is devoted to the work of foreign and domestic scientists, in particular: L. Balabanova, O. Grishnova, V. Danyuk, G. Dmitrenko, G. Zavinovska, A. Kolot, O. Krushelnytska, M. Meskon, I. Petrova, V., Petyukh, O. Stakhiv, V. Khrutsky et al. Their research considered a variety of new approaches, procedures and methods for organizing and conducting of personnel assessment. However, the need to use a systematic approach to this problem requires further research for the effective use of personnel assessment system in tourism enterprises.

Tourism industry is unique in that the personnel working in it makes a part of its goods, it is one of the main resources in tourism business, the main component of the end product, competitive advantage of a company. We can call personnel the most important resource, as tourism makes its activity only through certain people (Rovenskaya, V., & Shishkova, N., 2019). Thus, a profit level, image and competitive ability of tourist companies directly depend on creativity, consciousness and personal characteristics of their employees. The labor potential is of particular importance in the development and competitiveness of tourism enterprises, its unique role is due to the fact that the provision of tourism services, identification of their quality and level of provision is directly related to employees (Romanyuk, I., 2020). When it comes to improve the management of the tourist organization, in addition to paying attention to market issues, competitors, customers, etc., the main efforts in the tourism industry should be directed to its staff. Therefore, the function of personnel management is the most important function in the tourism industry. The tourist product includes tangible and intangible components, i.e. tangible and intangible services or goods. The material part includes hotel rooms, furniture, equipment, vehicles, food and so on, and the intangible part – the level of qualification and professionalism of managers, professional ethics and culture, communication policy, etc. While tangible services are easier to evaluate because they are real, objective, and commensurate with other objects, intangible services are much more difficult to evaluate objectively because they are abstract, subjective, and impossible to evaluate. Development, preservation and increase of the level of the staff professional competence is one of the main directions in the personnel management system of the tourism industry. It consists of an analysis of existing personnel, making decisions on the development, maintenance or restructuring of personnel, according to the overall strategy of an enterprise; on creation of organizational culture; on integrated

control and evaluation of personnel (Klimova, A., 2020). Personnel evaluation is an important element of effective management aimed at increasing the competitiveness of a company. Different systems, methods and techniques of personnel evaluation make it possible to identify and reveal the potential of each employee and direct it to the implementation of strategic goals of a company. To achieve maximum efficiency, personnel evaluation requires the use of all scientific approaches, as well as their generalization and combination. An objective assessment can be achieved only on the basis of professional, personal and business characteristics of an employee (Buchynska, T., 2017). One of the most important issues in personnel evaluation is the choice of evaluation methods used to evaluate certain indicators (Krikun, O., & Rybalka, A., 2020). It should also be noted that the evaluation results were reliable and objective, it is necessary to use the selection of indicators and criteria that best meet the task. Personnel evaluation is a necessary means of studying the quality of the human resources of the tourism industry, its strengths and weaknesses and the basis for improving the individual working abilities of employees and improving their skills (Kichko, I., & Gayova, D., 2021).

Formulation of the main material. Customer satisfaction in the field of tourism is achieved by the courtesy of staff, their sensitivity and professional qualities. Therefore, it is very important to take evaluation of the personal working in the tourism industry as seriously as possible. Personnel evaluation provides information on the effectiveness of employees, their potential and growth prospects, the causes of inefficient work of individual employees, needs and priorities in training and retraining. Usually a large number of approaches to personnel evaluation are divided into three groups, according to the focus, these are qualitative, quantitative and combined methods. However, it should be recognize that using one of the three main groups of methods, only a certain aspect of the employee or his socio-psychological characteristics can be evaluated. Thus, it is better to use comprehensive universal methods that incorporate all available approaches to personnel evaluation for objective evaluation analysis. Particular attention should be paid to methods of evaluation the competencies of staff, because they give the most objective idea of all the necessary qualities of employees for certain positions (Malytz, V. & Tarasenko, Y., 2018). Personnel evaluation is carried out to determine the suitability of the employee for a vacant or occupied position and it is advisable to do it according to the competencies of an employee (Huertas-Valdivia, I., 2021). In the tourism industry, it is impractical to evaluate personnel for their qualifications as a characteristic of the level of professional skills, it is more appropriate to evaluate the competencies that reflect not only the professional level but also business and personal qualities of tourism employees. The characteristics that allow to solve successfully the tasks in a specific field of activity and in a specific position are evaluated, and the authors call them the competencies. Evaluation of personnel by competencies is necessary to understand the existing human resources in the company, the efficiency of their use and the need to attract new ones. The essence of the proposed evaluation is to determine the set of human qualities, compare it with the reference version for a particular activity and make an informed management decision on how to bring the employee closer to the required “standard” (Tsybalyuk, S., & Bilyk, O., 2021).

Table 1

Reference version of competencies of a tourist services sales manager

Requirements to the personnel of tourist companies	Ranking by importance		
	Desirable	Important	Very important
1	2	3	4
Professional qualities, education			
1. Higher / incomplete higher education in the field of tourism	+		
2. Other types of education		+	
3. Knowledge of foreign languages		+	
4. Professional experience / practice in tourism	+		
5. Special knowledge and skills	+		
6. Sales skills, presentations		+	
7. Good user of a personal computer with various information systems			+
8. Sociability		+	
9. Focus on achieving results			+
10. Customer orientation			+
11. Responsibility			+
12. Tendency to learn	+		
13. Ability to plan work, organization ability	+		
14. Stress resistance		+	
15. Ability to work in a team	+		
16. Accuracy	+		
17. Attentiveness		+	
18. Loyalty to the tourist organization			+

There are four options for management decisions:

1. Teach if there is a lack of knowledge, skills and abilities;
2. Develop when you have basic skills and need to unleash potential;
3. Motivate if the necessary set of knowledge and skills is available, but not fully used;
4. Release when it is impractical to educate and teach.

Let us make a probable reference variant of qualities of the sales manager for work in tourist companies (table 1).

The following weighed ratios can be selected to determine the weighted evaluation: for the 1st Desirable rank – 0.5; for the 2nd Important rank – 1.0; for the 3rd Very important rank – 1.5.

For example, we need to choose the best one of three candidates for the vacant position of travel services sales manager. We calculate the weighted average values of the overall ratings for each of evaluated candidates evaluate by multiplying the weighted ratio by the rating result. To evaluate professional and personal qualities of the personnel the authors use a five-point scale with the following description:

Table 2

Indicator's number	Weighed ratio	Applicant 1		Applicant 2		Applicant 3	
		Score	Weighed score	Score	Weighed score	Score	Weighed score
1.	0.5	1	0.5	5	2.5	5	2.5
2.	1.0	5	5.0	2	2.0	5	5.0
3.	1.0	4	4.0	3	3.0	3	3.0
4.	0.5	3	1.5	3	1.5	3	1.5
5.	0.5	3	1.5	3	1.5	2	1.0
6.	1.0	5	5.0	4	4.0	5	5.0
7.	1.5	5	7.5	5	7.5	3	4.5
8.	1.0	5	5.0	4	4.0	4	4.0
9.	1.5	4	6.0	3	4.5	5	7.5
10.	1.5	4	6.0	5	7.5	3	4.5
11.	1.5	5	7.5	3	4.5	5	7.5
12.	0.5	4	2.0	3	1.5	4	2.0
13.	0.5	3	1.5	4	2.0	4	2.0
14.	1.0	5	5.0	5	5.0	4	4.0
15.	0.5	4	2.0	3	1.5	4	2.0
16.	0.5	4	2.0	4	2.0	3	1.5
17.	1.0	5	5.0	3	3.0	3	3.0
18.	1.5	4	6.0	5	7.5	4	6.0
Total score			73		65		66.5

- quality cannot be seen (1 point);
- development level: business quality can be seen far not always, but an employee already understands an importance of its appearance and strives to develop it (2 points);
- basic experience level: business quality can be seen in the majority of working cases (3 points);
- expanded experience level: business quality can be seen in standard and difficult conditions (4 points);
- creativity level: business quality can be seen in the most difficult conditions, an employee teach colleagues and improves himself (5 points) (table 2).

Analyzing the calculations in the Table 2, it is possible to conclude that the position of tourist services sales manager, according to the developed reference version of competencies, the applicant 1 is the most suitable.

Evaluation of employees of a travel company is to obtain data on human actions in real work situations and to identify his/her business, professional and

personal qualities. While some of professional qualities of our benchmark can be assessed by their presence or absence, it is much more difficult to obtain objective data on the personal qualities of tourism industry employees. It is better to receive information from people who communicate with this employee at different levels: leader, colleagues, subordinates, customers.

This method can be used to solve the widest range of tasks related primarily to the professional development of employees. It is used for the preliminary formation of the personnel reserve, identifying the need for training, creating plans for individual development and other needs. When forming the company's personnel reserve, it should be borne in mind that not all the necessary quality in the new position can be applied at the current work place.

Experts' personal sympathy for the test subject should be avoided. There is a danger of evaluating the degree of team cohesion rather than professional qualities and competencies of a person if he/she is able to build effectively his/her relationships with colleagues. To do this, it is necessary to approach very carefully and thoughtfully to preparation of questionnaires and options for their answers.

There are several ways to conduct a survey:

- paper survey;
- Google forms;
- automated services.

To conduct a paper survey, questionnaires should be printed out and distributed to all respondents. The disadvantage of this survey method is that the results have to be checked manually. Increasingly, such methods are being replaced by online surveys (Labanauskaite D., Fiore M., & Stashis R., 2020).

If it possible to create questionnaires in Google forms, this method is well suited for working with remote workers and to save paper. However, with this survey method, you will still have to process the results manually.

In case of the third method of survey, special services are used to automate collection and analysis of information about employees. This method guarantees the anonymity and independence of reporting by group. The disadvantage of automated services is that they are all paid.

The final stage of evaluation is to provide feedback (in the form of a personal conversation with a specialist or e-mailing). The main thing is that a person who became an object of such a large-scale study, gets acquainted with its results. In addition, the evaluator must have a clear idea of how and for what the evaluation results will be used.

After processing the results, it is necessary to compare new data with existing ones, draw conclusions, submit them to company's management, and ensure the preservation of results for further use, for example, to form a staff reserve.

The Martial Law in Ukraine has paused the tourism activities, but there are many examples in the world when, after the end of the conflict, the country quickly recovered and welcomed guests again. Taking into account the current popularity of our country in the world, we can conclude that there will be many people who want to visit Ukraine and see everything for themselves. Starting with the post-conflict "memory tourism", over time, tourism in Ukraine will be mixed with other interesting areas, namely cultural, marine, sports and

innovative rail tourism. Resumption of development and implementation of the new innovative project “Railway Tourism” will develop the tourist infrastructure of Ukraine and attract domestic and, most importantly, foreign tourists; replenish state and local budgets; create new jobs for population and increase their living standards; partially reduce the losses of the passenger economy by increasing the volume of rail traffic (Martsenyuk, L., & Charkina, T., 2017). Improving the state of the sphere of tourist services in Ukraine is also possible due to the favorable geographical location, the availability of optimal climatic conditions, national cuisine, intellectual potential and international image of the country. In future, after war ends, all this will also increase demand for tourism services, increase the flow of foreign tourists, provide new jobs, increase revenues to the state budget and thus improve the economic condition of the country (Biba, V., Tenitskaya, N., & Bilyzna, A., 2018). It is very important for the citizens of Ukraine to be ready for the restoration of our country and the hospitable reception of tourists from all over the world in gratitude for their indifference, support and large-scale assistance.

Conclusions. According to the results of the study, it is possible to make a conclusion that the implementation of the strategy and competitive advantage of any organization in the tourism industry is influenced by the correct selection of personnel, which in turn is the most important component of the end product. Thus, the personnel evaluation, which is carried out to determine the suitability of an employee for the vacant or occupied position is very appropriate. Therefore, the authors offer the models for determining the weighted evaluation of tourism industry personnel according to the reference version of the necessary competencies for different positions.

Conflict of Interest and other Ethics Statements

The author declare no conflict of interest.

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Галина ГРЕБЕНЮК

ПЕРСОНАЛ У ТУРИСТИЧНІЙ ГАЛУЗІ УКРАЇНИ ЯК ЗАСІБ ДОСЯГНЕННЯ КОНКУРЕНТНИХ ПЕРЕВАГ

Анотація. В умовах глобалізації туристичної галузі дедалі більше уваги вимагає організація управління персоналом та ефективність його використання, оскільки персонал є головним ресурсом підприємств туристичного бізнесу. Конкурентоспроможність та результати діяльності підприємств туристичної галузі на пряму залежать від ефективності управління персоналом, а саме від його об'єктивної оцінки та правильного розподілу за компетенціями, що відображають окрім професійного рівня ще й ділові та особистісні якості працівників туристичної галузі. Оцінювання персоналу розглядається як елемент управління та атестації кадрів, що застосовується на підприємствах туристичної галузі, як необхідний засіб вивчення якісного складу персоналу, його сильних та слабких сторін. Будь-яка оцінка є наслідком порівняння об'єкта з певними еталонами, нормативними вимогами, загальновідомими параметрами і оцінка персоналу не є винятком. У запропонованому підході оцінка персоналу передбачає порівняння певних компетенцій працівників з відповідними еталонними вимогами посади, яку займає або на яку претендує об'єкт оцінювання. Сутність запропонованого в статті оцінювання полягає в тому, що для кожної посади в туристичній галузі можна розробити свій еталонний варіант компетенцій, завдяки якому, після проведення оцінки, керівництво приймає виважене управлінське рішення, а саме, навчати, розвивати, мотивувати або звільняти об'єкт оцінювання. Навчання доцільно, якщо виявився брак знань, умінь та навичок; розвивати треба, коли є базові вміння та потрібно розкрити потенціал; мотивувати, якщо необхідний набір знань та умінь є, але не використовується на повну і звільняється працівник в тому випадку, коли виховувати та навчати недоцільно. В статті запропоновано підхід до вирішення проблеми об'єктивної оцінки персоналу туристичної галузі. Викладений підхід спрямований на отримання розгорнутої інформації про те, як певний співробітник проявляє свої професійні та особистісні якості та якою мірою вони відповідають займаній посаді. Запропонований підхід засновано на теоретико-методологічному інструментарії методу альтернативних характеристик та бальної системи оцінки.

Ключові слова: оцінка персоналу, зважена оцінка, компетенції, гугл-форми, онлайн-опитування, клієнтоорієнтованість, лояльність

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ENSURING ECONOMIC SECURITY OF ENTERPRISES TAKING INTO ACCOUNT THE PECULIARITIES OF INFORMATION SECURITY

Abstract. Protection of important interests of the population and the state from unauthorized access, protection of confidentiality and availability of information, is information security. A number of Laws of Ukraine have been created in the domestic legislation on information security, including the Law of Ukraine “On Information” and the Law of Ukraine “On Protection of Information in Information and Telecommunication Systems”. These laws regulate the legal framework for information security and information activities, among which the subjects of information security are the participants in these processes, the owners of information are responsible for ensuring the interests of the population and the state.

All information is generated, stored, processed and transmitted using appropriate information systems, technologies, computers, software, etc. In turn, computers and software can suffer from threats caused by threats from the Internet, network, mail, and so on.

To ensure effective economic security of enterprises, it is important to control the internal mechanism of functioning, monitor economic performance indicators, and make effective management decisions.

Keywords: *fraud, business risk, competition, information security, regulatory framework, combating fraud, national security, economic security of the state.*

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Introduction. Security is defined by many components, including personnel working with it, means of communication, information leaks, removal or intentional damage, and so on. An important element of information system protection is access to it, which is related to production management, finance, economics, inventions and more. One of the aspects of information security is the confidentiality of information provided by the use of protection systems of modern information systems.

Working with payment information systems, electronic money, has its own means of access through passwords, i.e. there is a check of work on user identification. It is a means of security with personal data of clients, registered in banking or financial institutions. Banking users are monitored via the Internet or information systems, which is dangerous.

Analysis of the regulatory and legal support of the information field of the enterprise offers a strategy for its information security. The main focus is on the protection of variable information as the most important for information security. There is a need to take into account the components of information security based on a systems approach.

Businesses face many threats. Most often, these are threats from competitors or criminal structures. They are often caused by political and legal instability, intensification of competition, illegal use of hardware and software, etc. Therefore, in the framework of enterprise management, in addition to the main functions, information security is assigned to managers.

Analysis of recent research and publications. As you know, the economic security of the enterprise – a complex, multi-vector concept. The information component occupies an important place in it. Information security is the ability of the company's staff to protect information resources and flows from threats of unauthorized access to them.

Analysis of the organization of the information space of the enterprise, as a rule, attention is paid in the works of various researchers, but mainly from the angle of economic efficiency of the enterprise (Rybalchenko, L., & Kosychenko, O., 2019). The main amount of information of the enterprise circulates within its organizational, legal and physical boundaries. Obtaining by criminal or other structures information necessary to harm the company, blackmail, or for corrupt practices, such as in the form of a “roof”, can be done through the objects of the information environment of the company from various channels and sources. These are open publications and databases, customers, suppliers, investors, credit institutions, intermediaries, personal data of employees and other channels. These sources can give a lot of information to competitive or criminal structures.

The purpose of the work is to study the information (economic) security of enterprises in the world and the application of the mechanism of regulatory and legal support of the information protection system at the enterprise.

Formulation of the main material. In recent years, the legal framework for the information protection system at the national level has improved significantly. This was reflected in the adoption by the Ukrainian leadership of a number of laws (d'Agostino G., et al., 2019 – Bank S., et al., 2018) and by-laws (Varnaliy, Z., et al., 2016) concerning the regulation of the creation, use, transfer and storage of information and copyrights, the procedure for licensing activities in the field of information protection, and the like.

On the basis of these documents, the legal protection of information is built, designed to provide the state legal framework and regulatory justification of a comprehensive system of information protection at the enterprise, regardless of its form of ownership and category of protected information.

At the same time, in addition to laws and other state regulations, the legal support of the system of protection of confidential information at the enterprise should include a set of internal regulatory and organizational documentation.

It should be noted that all these documents, depending on their main regulatory or legal purpose, indicate the requirements, rules or regulations to ensure the required level of information security in the enterprise or its departments, aimed primarily at staff and management.

Legal support makes it possible to resolve many controversial issues that inevitably arise in the process of information exchange at various levels – from language communication to data transmission in computer networks. In addition, a legal system of administrative measures is formed, which allows to apply penalties or sanctions to violators of the internal security policy of the enterprise, as well as to establish clear enough conditions to ensure the confidentiality of information used or formed in cooperation between economic entities. In this case, the parties who do not comply with these conditions are liable within the framework provided for by the relevant clauses of bilateral documents (agreements, contracts, etc.) and Ukrainian law.

The economic activity of any enterprise is always associated with the flow of information. As you know, any management is a continuous process of creating and implementing management influences to achieve the goal within the information field. In general, the information field of the enterprise can be divided into internal (own) and external. The internal information field combines information that originates within the enterprise. It is important to note that the quality and content of the internal information field mainly depends only on the company itself (primarily on management). The fact is that the company's own information field is formed by internal sources of information, the number of which is limited. The number of types of external information and its sources is very significant (Rybalchenko, L., & Kosychenko, O., 2019).

On the other hand, the information that provides the process of decision-making and management functions in a commercial organization, it is advisable to divide by type into conditionally constant and variable. Conditionally constant information includes information that is virtually unchanged over a long period (for an infinitely large number of control cycles). It includes both normative-reference and scientific-reference information. Regulatory information is needed to make decisions and monitor their implementation. It includes various normative and reference data, control indicators, standards.

This information rarely changes. Regulatory information is usually the most fully systematized, presented in a form that is convenient to work with and mandatory. Correction or cancellation of these documents is only at the direction of higher authorities. Scientific reference information is information obtained from scientific and technical literature, regulatory and technical documentation, various bulletins, news releases, etc.

Variable information, first of all, reflects the change of criteria of

management and work of divisions, and also the changes brought in the planned parameters. It includes summaries that change periodically in content and nomenclature. It includes groups of planning, operational, reporting information and similar types.

Planned information includes summaries of the parameters of control objects and control objects that must be achieved and maintained; about the parameters of production processes that need to be achieved and maintained for the required period. For production units and supply units, it is created in the form of specific planned tasks, indicators. For management units, it includes methods and means of achieving the objectives and is expressed in the creation of instructions, rules, the application of which regulates and normalizes the work of the management staff. This information is directive and is corrected during operational management.

Operational and production information includes a summary of costs, balances, shortages of materials and components, shortcomings of technological documentation, downtime. These reports on deviations in the processes of achieving the goal of management are necessary to create and implement corrective actions of management. In addition, it is a set of data that characterize qualitatively and quantitatively all types of products, as well as various reports on the movement of these types of products in the production cycle; data on the course of the technological process of production, on energy, on the position of vehicles, etc.

Reporting information includes various summaries of the status of their units, the results of production tasks, the state of supply and sales at a particular time. Taking into account the inclusion of the planned information of the enterprise in the variable, in the first place in full is the variable information.

It is clear that to achieve completeness and comprehensiveness of information protection only the development and implementation of even the most complete and impeccable legal support will be insufficient. Any laws or regulations lose their effectiveness and cease to be effective normative means of regulating various types of relationships in the absence of the environment to which these rules apply.

In other words, in order to create a reliable legal basis for the information protection system, it is necessary to organize this system, create the preconditions for its functioning, develop a set of consistent and coordinated activities, and identify its components and subsystems. For these purposes, the organizational system of information protection.

The organizational system of information protection is a set of organizational and organizational and technical measures to ensure information security at the enterprise, the creation of a common security policy and control of its effectiveness. Implementation of the project to create a comprehensive information security system should be carried out in stages.

The development and implementation of the system must be preceded by a thorough study of information resources of the enterprise and the presentation of justifications and arguments in favor of creating a protection system. Thus resources and labor costs for its creation and functioning are calculated and distributed in advance, the most priority ways and directions of its development are chosen. Then the possible causes, variants of manifestation and consequence of information security violations, failures of programs, hardware

and processing systems, as well as the transfer of information, its unauthorized receipt, modification (destruction) and dissemination are established.

In other words, the information-functional model of the enterprise is formed and the sketch scheme of system of protection is created. The organizational part of the system should include the following.

First, the identification of information that constitutes a trade secret of the enterprise, and compiling a list of such information with its division into groups according to the category of confidentiality and the required level of protection. In the future, such lists should be compiled for each unit or area of activity of the enterprise.

Secondly, planning the implementation of information security system (ISS), in the process of which the most vulnerable areas of information exchange channels are determined, the schedule of organizational and organizational-technical measures is made, the calculation of spent resources is made, the general list of employees (specialists, employees and heads) involved in system implementation and divisions is made. interaction of structural elements and parts of the enterprise at the stage of creating an ISS.

Third, taking measures to implement and implement the ISS. At this stage, the following can be done: compiling a list of dedicated premises where closed events are held or critical information is circulating; identification of officials authorized to exercise control and operational management of the ISS; advanced training of specialists in the field of information security, supporting the functioning of information security systems, tools and devices; regulation of functional responsibilities of employees of information security departments; definition of controlled zones; establishing the procedure for periodic attestation inspections of allocated premises, etc.

Fourth, at the stage of functioning of the ISS the following organizational measures should be carried out constantly: registration of works with the use of information constituting a trade secret; registration of all events related to the development, use, transmission of information containing confidential information, and making changes to protected information resources; keeping records of documentation and media of confidential information; responding to the manifestation of destabilizing factors in order to prevent or reduce the effect on information; delimitation of rights of access to protected information resources.

Fifth, measures are being taken to monitor the effectiveness of the system. For example, conducting periodic inspections, including the use of special testing programs, reviewing registration documents, monitoring the implementation of organizational measures to comply with the rules of security policy, analysis of the protection system, making decisions to improve hardware and systems, organizational construction and security policy.

In addition, regular preventive interviews should be conducted with company personnel to prevent violations of security policy. These conversations are necessary to raise the level of awareness of employees in relation to the problem of information security to the level of understanding by each of them of the usefulness and necessity of the measures taken. These measures should be aimed at ensuring information security, which, in turn, is an integral part of the overall security of the enterprise. Only a conscious attitude of employees to this problem can make the protection

system truly effective and reliable.

The formation of the concept of economic security of the enterprise includes the following stages: analysis of the impact of internal and external factors on the state of economic security of enterprises; components and means of ensuring and principles of economic security of enterprises; assessment of the current state of the level of economic security of the enterprise; development of a set of measures and tools to ensure the economic security of the enterprise. Since the object of guaranteeing economic security is a stable economic condition of the enterprise, which, in turn, is a complex and multifaceted mechanism, the effective guarantee of its protection should be implemented through a comprehensive approach to managing this process. An integrated approach involves taking into account the management of the object of all its main aspects, and the elements of the managed system are considered only in the totality of integrity and unity.

The main content of the concept of safe operation is the formation of the foundations of the enterprise management system aimed at creating conditions for stable operation and systematic satisfaction of the enterprise's security needs at all stages of its life cycle – from birth to independent or forced liquidation (bankruptcy).

The basic principles of operation of the management system within the concept of safe operation of the enterprise are as follows:

1. Unconditional satisfaction of both the general needs of the enterprise and its employees.
2. Flexibility of the structure of economic potential, which ensures its stable functioning in the present and safe operation in the future.
3. Constant expectation of threats, both internal and external.
4. The ability of the management structure to respond quickly to threats and effectively use existing opportunities.
5. Effective information support of planning and use of enterprise strategies.
6. Public awareness of the importance of creating favorable conditions for the company to take measures to maintain its own economic security.

The main threats that hinder economic security are: divergence of economic interests of enterprises, weak motivation of employees to prevent threats and their lack of interest in the final results of the enterprise. In these conditions, the company is forced to adapt to the external environment without backlash (Rubalchenko L., & Ryzhkov E., 2019).

Therefore, its capabilities remain to control the internal mechanism of operation, monitoring of economic indicators of financial and economic activities and effective management decisions. In this situation there is a need to form a concept of economic security of enterprises for this based on the analysis and synthesis of existing scientific views systematized the main functional elements of economic security of the enterprise, which include: financial, technical, intellectual, political, legal, informational, legal and social.

Fraud is a serious problem faced by organizations of all types, sizes and industries. It manifests itself in different ways, but in general it is divided into three categories: misappropriation of assets, corruption and fraud with financial statements. For the last 20 years, economic crimes and fraud have remained

one of the world's leading economic crime issues. The processes taking place in the field of financial and economic relations lead to the fact that the state is increasingly losing control over the economy and finance.

According to the results of the World Survey of Economic Crimes and Fraud in 2018, 48 % of Ukrainian organizations suffered from cases of economic crimes and fraud (in 2016 – 43 %). For comparison, the world average for economic crime is 49 %. One of the main types of economic crimes for many years is bribery and corruption, which are negatively affected by 73 % of Ukrainian organizations that have become their victims (Rybalchenko, L., & Kosychenko, O., 2019).

We will conduct research on economic crimes and fraud and assess their impact on businesses around the world. In 99 countries, more than 5,000 respondents, the amount of losses in 2020 amounted to more than 42 billion USA dollars.

In Figure 1 cited Crimes: frequency of overall experience. It was the biggest in the world Customer Fraud (35 %), Cybercrime (34 %), Asset Misappropriation (31 %), Bribery and Corruption (30 %), Accounting/Financial Statement Fraud (28 %) and other (Figure 1).

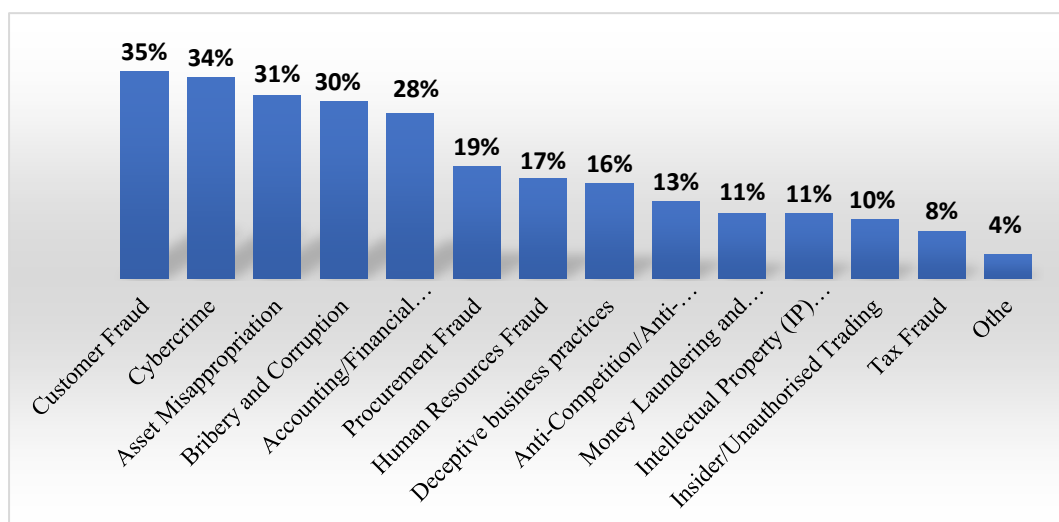


Figure 1 – Crimes: frequency of overall experience, 2020

Source: built by the authors according to the data (PWC Ukraine “World Economic Crimes and Fraud Survey 2020. Removing fraud from the shadows’ ”)

51 % of respondents in Ukraine suffered from fraud in 2020, this indicates that this figure is higher than the global average (47 %), and there has been an increase compared to 2019 (48 %). More than 1/3 of respondents in Ukraine suffered from 2-5 fraud incidents in 2020. Comparing the dynamics of fraud in Ukraine and the world, it should be noted that the largest and most popular types remain: misappropriation of property, corruption, customer fraud, cybercrime, and procurement fraud (Figure 2).

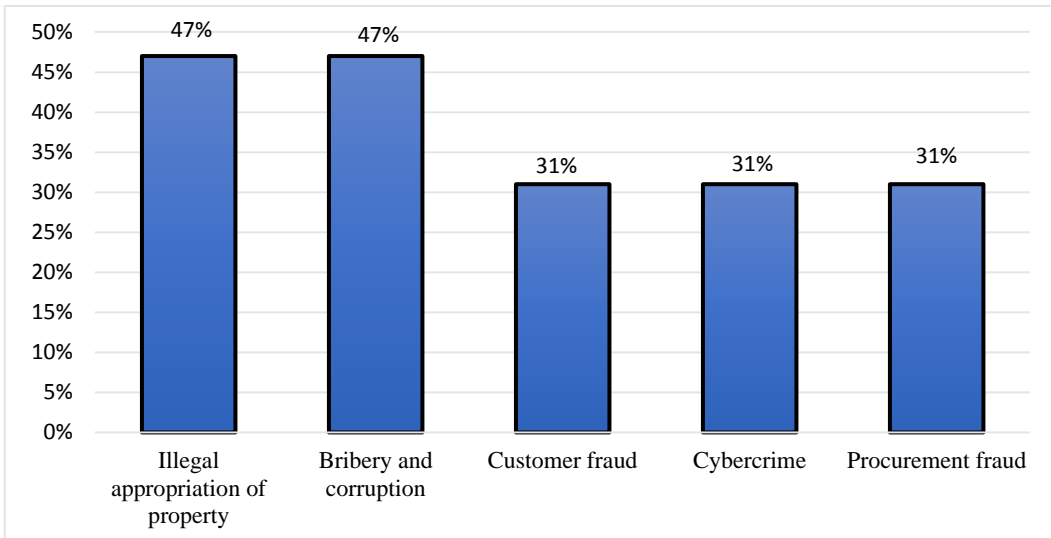


Figure 2 – The most popular types of fraud in 2020

Source: built by the authors according to the data (PWC Ukraine “World Economic Crimes and Fraud Survey 2020. Removing fraud from the shadows’ ”)

For the three types of property fraud, unfair competition and procurement fraud were the most significant for domestic companies in terms of financial losses (Figure 3). Of these types of fraud, the share of misappropriation of property was the most unprofitable for 19 % of companies, which is 42 % of these types of losses. Unfair competition and procurement fraud account for 29 % of losses for companies for 29 % of losses. Almost two-thirds of companies have already suffered losses from these types of fraud.

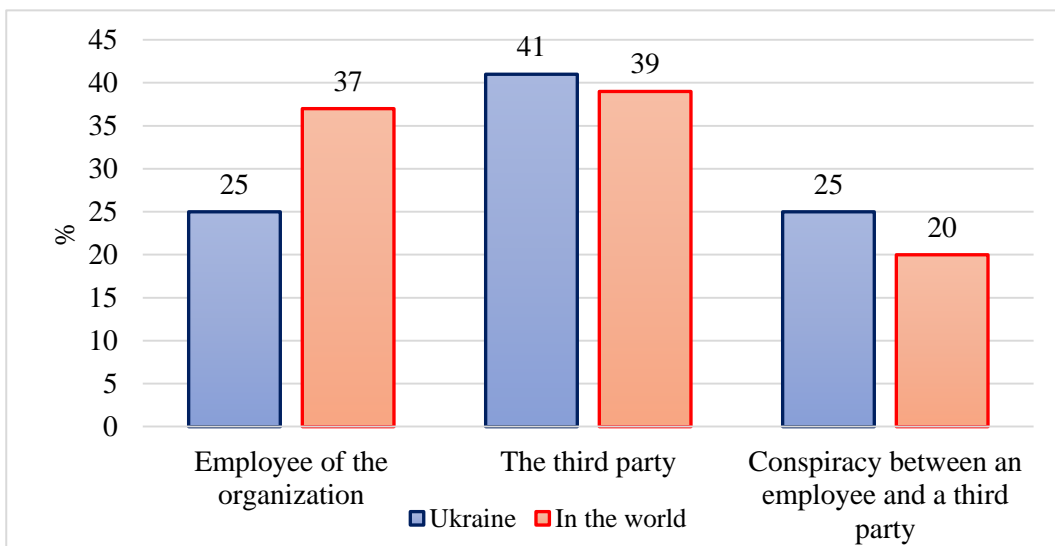


Figure 3 – The most unprofitable types of fraud in 2020

Source: built by the authors according to the data (PWC Ukraine “World Economic Crimes and Fraud Survey 2020. Removing fraud from the shadows’ ”)

The largest factors of fraud in enterprises (Figure 4) are the “third party”, whose share in Ukraine is 51 % (41 % of enterprises), in the world 49 % (39 % of enterprises). Fraud caused by employees of domestic enterprises, their share is 40 % (25 % of enterprises), in the world 60 % (37 % of enterprises) Conspiracy between an employee and a third party in Ukraine their share is 56 % (25 % of enterprises), in the world 44 % (20 % of enterprises).

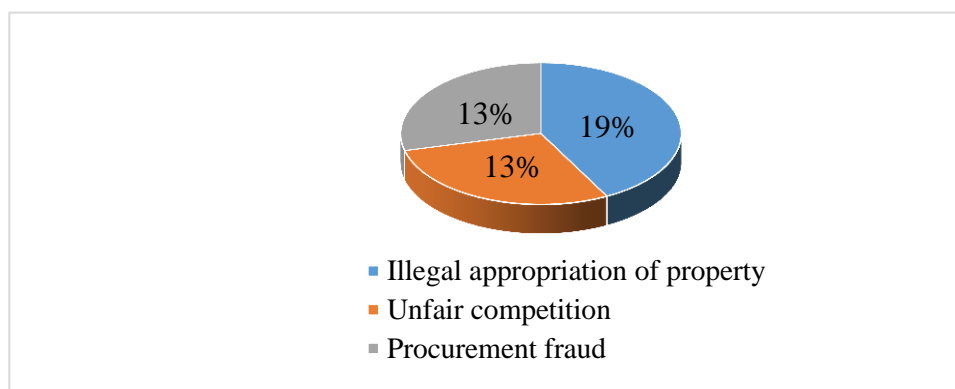


Figure 4 – Factors of enterprise fraud in 2020

Source: built by the authors according to the data (PWC Ukraine “World Economic Crimes and Fraud Survey 2020. Removing fraud from the shadows’ ”)

Almost half of the respondents in Ukraine do not conduct at all or only informally check and constantly monitor the integrity of their counterparties. The cost of fraud for businesses in 2020 was as follows (Figure 5)

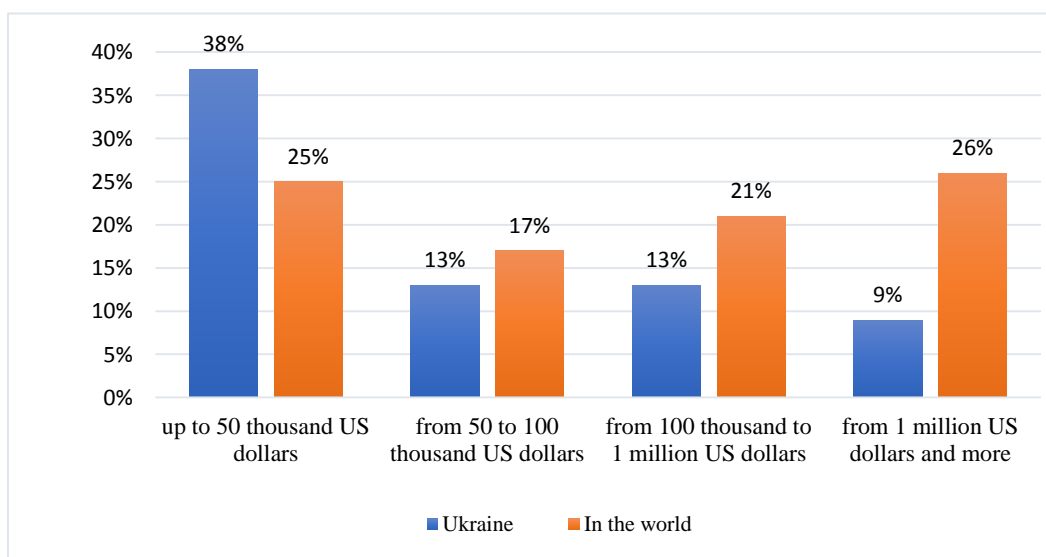


Figure 5 – The cost of losses of enterprises in 2020

Source: built by the authors according to the data (PWC Ukraine “World Economic Crimes and Fraud Survey 2020. Removing fraud from the shadows’ ”)

In Ukraine in 2020, 38 % of enterprises suffered losses from fraud (Figure 5), the amount of which amounted to 50 thousand US dollars, which is more than 25 % in the world. For 13 % of domestic enterprises, losses from fraud ranged from 50 to 100 thousand US dollars, in the world for 17 % of enterprises. Another 13 % of Ukrainian enterprises suffered losses ranging from 100 thousand to 1 million US dollars, in the world 21 % of enterprises suffered. The largest losses of 1 million US dollars and more fraud were caused by 9 % of Ukrainian enterprises, in the world 26 % of enterprises suffered such losses.

Of all Ukrainian companies, only 59 % investigated their worst case of fraud, and a third reported it to the supervisory board. Only 3 % of respondents in Ukraine hired an external forensic expert in response to their worst case of fraud, compared to 20 % of respondents in the world. Every fourth organization in Ukraine does not have a special risk management program, 22 % of respondents in Ukraine have not conducted any risk assessment in the last two years (PWC Ukraine “World Economic Crimes and Fraud Survey 2020. Removing fraud from the shadows’ ”). On average, six fraud cases were reported per company.

Conclusions. Thus, variable information is the main source of data about the enterprise. But not only because it contains the most important information about the current state of the organization, but because it is used by all governing bodies to perform their basic functions. Therefore, variable information in the overall structure of information will be of major interest to competitors of the enterprise. And this is not just because of its entry into the total amount of information of the enterprise, but because through access to it may be possible to access at least one of the management of the enterprise.

In the information space of the enterprise there are always objective opportunities for loss or leakage of information. Therefore, information protection, first of all, should be built taking into account the content of variable information and ways to work with it. This applies to all streams of variable information circulating in all communications of the enterprise from ordinary documents, local computers, cable, telephone and computer networks, mobile communications. Information security will never be fully ensured if there is no analytical component, that is, there will be no systematic work on the analysis of the information field of the enterprise.

Information security of the enterprise should be provided, first of all, by legal methods of protection. At the same time, an important role in improving the efficiency of the information protection system at the enterprise is played by its organizational component, the creation of protection of corporate information from competitors and criminal organizations.

Professional fraud can lead to financial losses, court costs, which can lead to the closure of the organization. Only strategic planning can significantly reduce the risk situations in enterprises that have arisen as a result of fraud. Company policy should be aimed at the use of modern means to prevent fraud.

Thus, an important place in the process of enterprise security is the formation of the concept of economic security of the enterprise, which includes means and principles of economic security of enterprises, tools and factors influencing the economic security of enterprises, the main elements of economic security.

We offer the following steps to combat fraud:

1. Identifying risks and applying effective measures.
2. Effective management, qualified experts and monitoring of anti-fraud information technology
3. Analysis of the causes of fraud.
4. Conducting investigations into the identified consequences of fraud.
5. The need to inform law enforcement agencies about fraud at the enterprise.
6. Increasing the use of effective mechanisms for internal control of fraud prevention in the enterprise.
7. Introduction of modern advanced technologies to protect information from criminal activity.

Conflict of Interest and other Ethics Statements

The authors declare no conflict of interest.

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ЗАБЕЗПЕЧЕННЯ ЕКОНОМІЧНОЇ БЕЗПЕКИ ПІДПРИЄМСТВ З УРАХУВАННЯМ ОСОБЛИВОСТЕЙ ЗАХИСТУ ІНФОРМАЦІЇ

Анотація. Захист важливих інтересів населення та держави від несанкціонованого доступу, захист конфіденційності та доступності інформації, представляє собою інформаційна безпека.

У вітчизняному законодавстві щодо інформаційної безпеки створено низку законів, серед яких Закон “Про інформацію, інформатизацію і захист інформації”. Цим законом регламентовано правові основи щодо інформаційної безпеки та інформаційної діяльності, серед яких суб’єктами інформаційної безпеки є самі учасники цих процесів, власники інформації несуть відповідальність за забезпечення гарантій інтересів населення та держави.

Суб’єктами інформаційної безпеки є інтереси тих, хто використовує інформаційні системи та засоби щодо захисту і збереження інформації від можливих загроз. Питання інформаційної безпеки пов’язано з інформаційними технологіями, які використовуються для забезпечення інформаційної безпеки.

Захист інформаційної безпеки полягає не лише у застосуванні несанкціонованого доступу до інформації, а й використанні відповідних методів щодо її безпеки та захисту.

Уся інформація формується, зберігається, оброблюється та передається з використанням відповідних інформаційних систем, технологій, комп’ютерів, програмного забезпечення, тощо. У свою чергу, комп’ютери, програмне забезпечення можуть потерпати від загроз, які спричинено через небезпеки, що потрапили через інтернет, мережу, пошту, тощо.

Для забезпечення ефективної економічної безпеки підприємства важливим є контроль за внутрішнім механізмом функціонування, моніторинг економічних показників діяльності, прийняття ефективних управлінських рішень.

Ключові слова: шахрайство, підприємницький ризик, конкуренція, боротьба із шахрайством, інформаційна безпека, національна безпека, нормативно-правова база, економічна безпека держави.

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IMPROVEMENT OF THE TOURISM INDUSTRY MANAGEMENT DUE TO INTRODUCTION OF NEW TRENDS AND TYPES OF TOURISM

Abstract. Today's extremely difficult conditions dictate their own behavior and the survival of business in any field. The situation in tourism business has become the most difficult. Therefore, there is an urgent need to find new alternatives to existence and development. Quite a lot of studies, both foreign and domestic, are devoted to the analysis of the needs of a modern tourist and the search for new trends in the tourism industry to meet them. However, they do not cover all external factors that may affect the specifics and

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development of tourism, in particular those related to military actions, which take place in Ukraine.

The authors in their study emphasize the essential need for digital transformations and the development of digital culture. Since digitalization is the fastest way to detect, respond to and adapt to internal and external changes.

The authors propose the stages of tourism industry development, which show the changing preferences of tourists over the past 20 years, provide existing major types of tourism, the current global trends are considered in detail, which appeared due to growing individual consumer needs and the COVID-19 pandemic. There is also a list of future types of transformation of tourists, the emergence of which is designed for the period up to 2030. These types take into account almost all the preferences, needs and goals of consumers of tourist services.

The authors also proposed a new type of tourism, based on military actions in Ukraine and their consequences, which may become a future trend of the tourism industry. The emergence of new destinations and the use of global trends is another additional opportunity to attract new consumers to the tourism business and earn extra income through the introduction of new types, new tours, visiting special places and a whole range of the best quality services.

Keywords: *tourism industry, types of tourism, tourism trends, future types of tourism, digital culture, digital transformation*

Introduction. At the time of continuous military actions in Ukraine that take away thousands of civilian lives, destroy housing and industrial infrastructure, cause great damage to human health and the environment, most companies have put their activities on “a pause”, but all this is a temporarily question.

The tourism business, which has recently lost a large number of business enterprises during quarantine measures, has suffered huge losses, is gradually adapting to changes in the external environment, and offers new directions and new approaches to provision of tourism services. There are huge transformational changes in all possible manifestations, and above all these changes concern new thinking, making new non-standard decisions, time of creativity, time of search for non-standard methods, schemes, introduction of innovative technologies.

Analysis of recent research and publications. Currently, Ukrainian and foreign scientists are studying new types and directions of tourism. They offer new trends in the tourism industry, areas that bring huge income to the world. For example, one scientists from New Zealand studying research tourism in his paper (C. Shah, A., Trupp, & L. Stephenson, 2022), which includes scientific, academic / educational and volunteer tourism, found that more virtual practices of scientific, academic / educational and business tourism are used. It became especially after COVID-19, when quarantine measures were introduced. That is due to the fact that people become more confident in the use of new technologies, and the technologies, academic and business services develop with more online educational products and researches. It is fair to say that the composition of research tourism can become quite noticeable, this type of tourism remains multifaceted, dynamic, progressive, unique and adapted to modern changes in external environment, so it needs to be developed.

Scientists from Nepal, in their scientific work consider one of the newest forms of agricultural tourism – Greyhound-tourism, which accurately connects the development of gardening with tourism (P. Gyawali, S. Bhandar, & J. Shrestha, 2022). Due to the COVID-19 pandemic, gardening and tourism suffered a lot. Commercial gardeners suffer heavy losses due to the

introduction of quarantine measures in the country. In addition, international tourism in 2020 declined. In this regard, there is a need for a promising approach that can quickly revive these two sectors after the COVID-19 pandemic (Zadoja, 2021).

Greyhound tourism is a new concept for Nepal with great opportunities, scales and challenges. It combines two commercial enterprises, horticulture and tourism in one industry or location. The authors state that the most important advantage of it is that it provides a double advantage of tourism and horticulture to farmers. In this regard, greyhound tourism can be an effective and sustainable approach to their revitalization of the two sectors following the COVID-19 pandemic, which ultimately increased farmers' incomes at an exponential rate. Sustainable economic growth can be achieved by combining these two sectors.

Ukrainian scientists considered in their study (O. Shykina, Ya. Honcharenko, & I. Remihailo) the development of business tourism in the Odessa region. Business tourism is, in fact, a form of travel that involves doing business, but away from home. However, the pandemic period makes its adjustments to the methods of its implementation. The authors of the article believe that the active policy of the state in the field of tourism, its willingness to cooperate with the private sector, airports, airlines, tour operators, and hoteliers will play the key role in the recovery of the industry. It will promote the country's image at the national and international levels; encourage safe travel, as well as provide comprehensive support, including information, business and tourism: keeping abreast of national and regional medical protocols, making available information on current contacts of health care facilities, etc. In the last few years, Ukrainian MICE-tourism has become one of the main areas of business in the country, so it needs to be developed.

Recently, more and more new types of tourism appear in the world, which are in demand, so this topic needs to be improved and is very relevant.

The purpose of our article. The purpose of this article is to study existing tourism trends and develop new types of tourism activities that are in demand over time.

Formulation of the main material. The world market of the tourism industry, which used to be very stable and developed rapidly, has lost its position in the last two years. Nevertheless, it tends to regain its potential by transforming its activities and services, changing management approaches and introducing new tourism trends.

A person is arranged in such a way that he/she needs to rest after a working week, and the better the rest is, the more his/her work is efficient. With age, a person's living space is constantly expanding, but after gaining some experience and worldview in old age, a person begins to narrow his living space, change the goals of their travels and the number of trips.

It is believed that to understand the relationship between a human and his external environment, it is necessary to generalize existing concepts to define the individual as the subject of life property. In this direction, the question of the possibility of influencing the change in the size of human living space with the help of tourist services remains unsolved (T. Charkina, & L. Martseniuk, 2017).

However, a modern tourist is not satisfied with such a rest as it was ten –

fifteen years ago. The modern tourism industry needs to be transformed because of the changes that are taking place in the environment.

In the conditions of digital transformations and radical rethinking of the organization work, all enterprises improve or change their technologies, business processes, improve the skills of employees, management develops new strategies, everything is done to increase business efficiency and fully meet growing consumer needs. Individual services are becoming especially important (Charkina, 2021).

Digital transformation is not only technology, being a digital organization means more than just using digital products, services and interacting with customers. Technology is a tool that allows employees to work more efficiently and in better conditions, and the business as a whole to strengthen core operations. Nevertheless, the digital transformation may end without even started if the company's employees do not understand why, how and what is happening. Therefore, the transformation of the company into digital form requires major changes in the actions of employees, their behavior and interaction with other people, inside and outside the organization. In other words, successful digital transformation begins with cultural transformation (<https://dtek.com/>).

Cultural transformation is also related to the level of modern education, without which there can be no such cultural changes. The modern technological level of education, as a result of information, technological, cultural revolutions, as well as global challenges and threats, encourages high speed change. Such modern requirements fundamentally change the content of education, and the dynamic needs of the tourism business require educational systems to adapt constantly, both through the revision of programs and plans, and through the continuity of education beyond schools (Tsviliy, 2021).

Companies cannot have employees of a new level, high qualification and culture, with an appropriate set of knowledge, if they do not have a proper quality education.

Digital culture in this case is a set of principles and values in corporate culture, which characterizes the use of technology to interact with society and solve problems in professional activities. In essence, it is an attitude or some unspoken code of how everything happens in the company; it gives employees freedom of thought and situational decision-making. Digital culture means increasing the level of digital skills of employees, literacy and ability to use modern technologies and software, taking into account all the opportunities provided by information progress (<https://dtek.com/>).

Digital culture is influenced by many factors – from the size of the company to the industry or even the country in which the business operates. There are 10 important principles that influence the formation of digital culture:

1. Customer orientation: in the center of all areas of activity – the customer or user, employees in the development of products or services put themselves in the place of the customer. Digital transformation, where technologies are implemented for their own sake, is doomed (<https://dtek.com/>). It is very important to understand why you currently need a product or service. It does not make sense to introduce what is not in demand in the modern market, or what has lost its existence.

2. The economic value of a product (EVP) is the utility in the form of satisfaction or savings that a product (service) brings to a consumer (Tsviliy, 2021).

3. Data-based work: in digital culture, the quality of data and information is ensured, and decisions are made on the basis of data.

4. Openness to radical change (disruption): rapid adaptation of staff to changes in the environment, changes in approaches to decision-making, non-standard thinking, changes in business models, technologies, structures.

5. TL approach (test and learn): it is a powerful tool for marketers, it allows them to make more effective decisions, and understand what works and what does not work, and where new opportunities for productivity growth, allows them to make better business decisions (<https://pidru4niki.com>).

6. Dynamics of decision-making: employees act and react quickly, focus on action, not planning. In the rapidly changing digital world, planning and decision-making must move from long-term to short-term.

7. In order to increase the dynamics, it is necessary to expand the rights and opportunities for employees: employees must gain autonomy to make their own decisions (<https://dtek.com/>).

8. Openness: communication between different levels in the hierarchy is direct and honest. A very important point is the transformation of “vertical” communication (hierarchically – from top to bottom) to “horizontal”, control – to the delegation.

9. Collaboration: joint activity in a certain field of two or more people, companies or organizations, for more successful and efficient operation of the enterprise cooperation is valued more than individual efforts. Also in digital culture, greater success is due to teamwork. In the process of collaboration, people or representatives of organizations share their knowledge, experience, useful information; learn to reach eventually an agreement (consensus).

10. Ecosystem formation: every organization develops and changes together with the external environment, any innovative activity that provides competitive advantages of the enterprise must preserve the ecosystem.

In the tourism, as in other types of businesses, the needs of consumers of services are changing, the types of tourist activities are changing, new forms and new trends are emerging.

Types of tourism are of great importance for the practical activities of tourism managers. They help to identify the demand for tourist services and form the tourism market, produce and sell tourist products, solve problems of territorial location of tourist infrastructure, plan the development of the material base of tourism. In general, a business that brings a lot of income to the state, you need to develop and invest in it and introduce new types and forms (<https://www.facebook.com/business/news/>).

If earlier the main types of tourist activity were:

- Recreational tourism;
- Excursion tourism;
- Health tourism;
- Business tourism;
- Scientific tourism;
- Rural tourism;
- Ecological tourism;

- Religious tourism;
- Educational tourism;
- Shopping tourism and others.

Today, current trends in the tourism industry are changing, as time and changes in the environment require new forms, creative approaches, non-standard solutions and the transition to another level of service. The services to be provided should be reasonably priced, creative, high quality, individualized, and provided in a safe environment with an additional range of services.

Therefore, along with the existing types of tourism, global trends in the tourism industry appear which should better meet the growing needs of consumers of this service. In particular, the emergence of new areas was in demand after a long pandemic and long quarantine measures.

Lack of funds, job losses and restrictions on free time have led to the emergence of such new areas such as bleisure (business + leisure), a combination of business travel and leisure. When in the past 2 years we have been forced to move to a remote form of work and education, this trend has changed somewhat and became a trend of “combining leisure with work”, called WFHotel (working from hotel), a person can work remotely and combine work and rest, while having the opportunity to work and rest (<https://tourkazka.com>).

Another modern trend in tourism is solo tourism, i.e. travelling alone, which has also become very popular, especially during the pandemic.

Also, the emergence of mini-trips, weekend trips have become widespread, the opportunity to relax in a few days, switch to positive experiences and see something interesting, new, like a breath of fresh air. Herewith, the main thing is that it is less costly, because a large number of people, due to the pandemic, lost a part of their income, and some of them lost their income in full. Anyway, life goes on, you need to have strength after working week and be able to improve your emotional and psychological state.

The emergence of another modern trend in the tourism industry – Workations – a combination of work, study and leisure, a large number of tourists, namely 53 % prefer travel that they can afford in the short term. Nowadays, when it is not possible to plan your vacation in advance or we cannot plan our budget, we have only short-term plans, the ability to combine study and leisure is a real opportunity for many tourists at the present moment.

Also, the emergence of wellness tourism, a direction that helps to hold a healthy lifestyle and maintain psychological state, which it is increasingly difficult to maintain in the current events. People are paying more and more attention to the right way of life and physical condition (<https://tourkazka.com>).

With the advent of digital technology, more and more people have the opportunity to combine virtual experiences and real feelings. The advent of online tours allows to get an incredible experience without leaving home, especially in times when there are restrictions on travel and financial stability (<http://amadeus.ru/news>).

However, the time that is fundamentally changing everything is preparing us for the fact that future trends in the tourism industry, which will appear soon, will be caused by the rapid changes that are constantly taking place in the world. Why it is so important for us to have an idea of the emergence of new areas and types of tourism. That is due to the important

demand for certain related services that will be provided, forecast and plan investments in new areas of tourism business.

In turn, the study of the global consulting company The Future Foundation (Charkina, et. al., 2022). pointed to the transformation of types of travelers, including six new types that will appear by 2030:

1) fans of social networks (Social Capital Seekers), who will plan a vacation solely with an online audience, largely based on tourist reviews and recommendations of acquaintances. The rapid development of social networks, adapted to generating of publications and “likes”, can form a completely new tourist segment;

2) fans of cultural experience (Cultural Purists), who consider travels as a chance to immerse themselves in another’s, sometimes even quite uncomfortable culture, while the enjoyment of vacation depends on the authenticity of the experience;

3) supporters of ethical principles (Ethical Travellers), who will plan trips according to ethical beliefs, such as the need to reduce greenhouse gas emissions or improve other people’s lives. Such travelers during their vacations often improvise or take part in volunteer projects, local social development or environmental activities;

4) searchers for simple solutions (Simplicity Searchers), who will choose comprehensive proposals to avoid having to organize something on their own. Holidays for this category of tourists are a rare opportunity to relax, so safety and fun should be guaranteed;

5) travelers as needed (Obligation Meeters) who plan a trip in connection with an event or task, regardless it is a business trip or a holiday, and will therefore be limited in time and budget; they will prefer technologies based on algorithms that will get rid of unnecessary clutter;

6) award hunters (Reward Hunters), who enjoy traveling, seeing it as a reward or a must-have experience that will be an effective investment of money, time and energy.

However, changes in the world and military events in Ukraine may lead to another area of tourism that will be associated with these events, for example “Ukraine – won the war”, Ukraine that won the war. A very large number of our country’s followers around the world, who watch us all the time, who help, support our country, our freedom, our independence, after war ends will seek to see everything that the war has done with our state, our cities. They will be interested to visit personally the center of these events. That will be much more than the events of Chernobyl, which many people wanted to see. A large number of people may come and want to help our country in person.

Figure 1 shows the transformation of types and development trends of tourism. This illustrates the extent to which tourism activities change over time, especially in conditions of rapid changes in environment and preferences of consumers of tourism services.

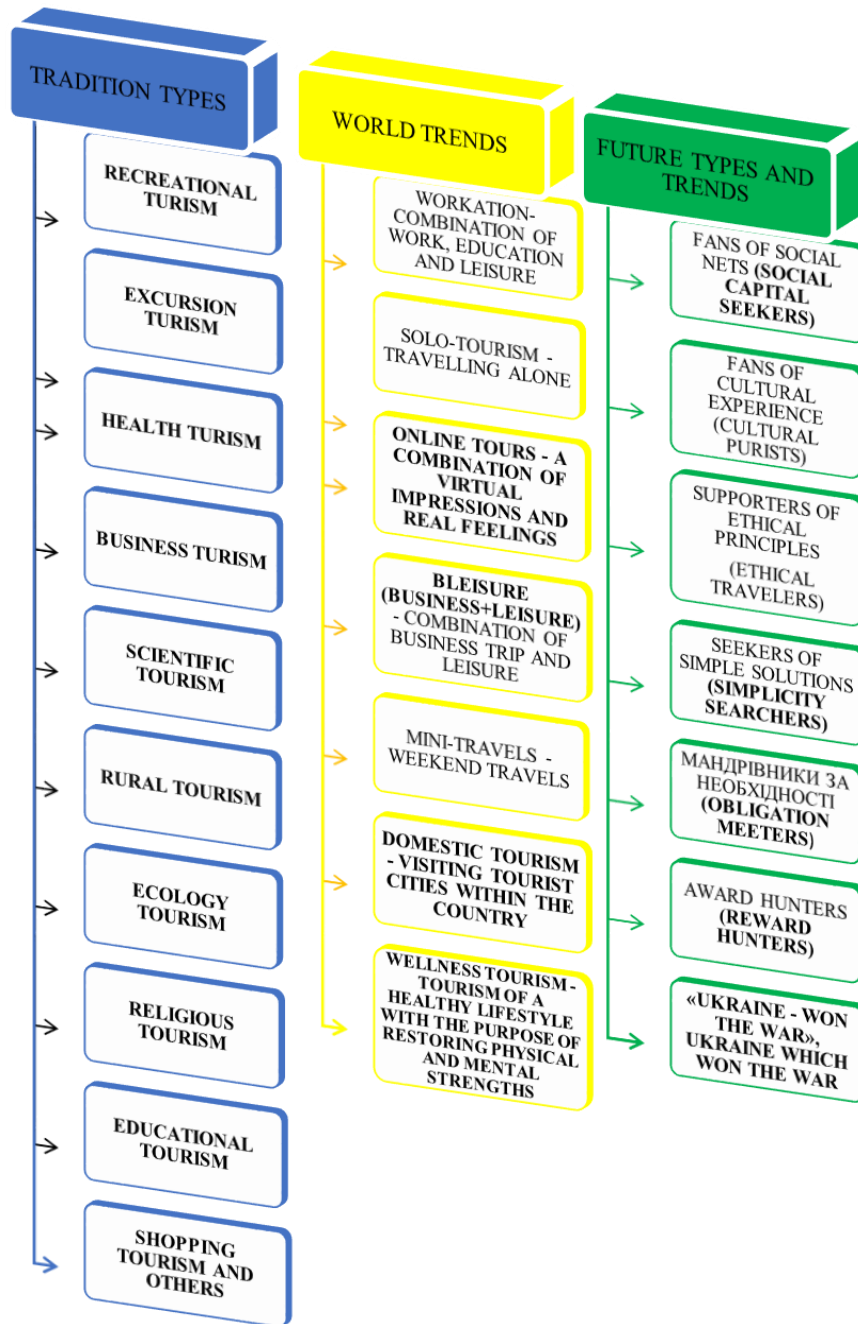


Figure 1 – Transformation of types and trends of tourism development
Source (author's development).

Thus, along with the transformation of the principles of tourism development, the types and spheres of tourism are changing, focused on the provision of the latest comprehensive tourist services and provides the formation of mass and individual tours that maximally take into account the transformation of consumer needs and promote positive experiences. This contributes to the emergence of a progressive service, which provides an expanded range of services in accordance with the requirements of individual consumer groups.

Making a tourism business it is necessary to know how to evaluate the efficiency of any business project, if we want to introduce a new type of tourism activity, we must assess its economic effect, which this project gives.

According to the scientist O. Muzychenko-Kozlovska, the following

indicators are important for assessing this effect: the investment payback period and the rate of overall capital investment efficiency (return on investment capital rate). In particular, it is proposed to determine the feasibility of investments by comparing the estimated coefficient of investment economic efficiency:

– E_p with the rated coefficient E_d , which is adopted at the discount rate of the NBU of Ukraine.

If $E_p > E_d$, then investing is considered appropriate. The specified coefficient can be obtained with the following formula (O. Muzychenko-Kozlova, 2018):

$$E_p = \frac{P_{pr}}{K_i(1+E_d)^t}, \quad (1)$$

where,

P_{pr} – amount of profit, million UAH;

E_d – return on invested capital rate (discounting rate), %;

t – time period between investments and making a profit, years.

Thus, we can determine the feasibility of the implemented project, and its effectiveness, as well as prospects for its implementation.

The situation in tourism sector presently is not easy, given the war, which has greatly destroyed domestic and other types of tourism, however this pause in the tourism industry will end. Tourism has quite positive future, other areas and types of tourism will appear. Any crisis is always a new drive to the fast, rapid development, a search and discovery of innovative projects, models, which business just finds in new realities.

Conclusions. It is necessary to bring the tourism business to a new level and get rid of the tourism companies' crisis quickly. Nowadays, when the modern world is constantly changing, it changes people's lives, the rhythm of our lives, our preferences, the world economy and the work of all existing enterprises. Tourism business is not an exception, as consumers of services are constantly expanding and changing their needs, and business leaders adapt to their requirements to be in demand in the market of tourism services. New types, modern trends, the latest technologies in the tourism business emerge. Thus, they meet the needs of more and more tourists and bringing even more profit to their countries.

The authors have created stages of the tourism industry development, which show changes in tourism activities, taking into account the rapidly evolving needs of consumers of tourism services. Current global trends in the tourism industry are presented and a list of future types of travelers who will appear by 2030 is proposed.

Authors also propose a new type of tourism that will appear after the war ends in Ukraine and can become a future trend of the tourism industry.

Conflict of Interest and other Ethics Statements

The authors declare no conflict of interest.

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УДОСКОНАЛЕННЯ МЕНЕДЖМЕНТУ ТУРИСТИЧНОЇ ІНДУСТРІЇ ЗА РАХУНОК ВПРОВАДЖЕННЯ НОВИХ ТРЕНДІВ ТА ВИДІВ ТУРИЗМУ

Анотація. Сьогодні надзвичайно складні умови диктують власні правила поведінки та виживання бізнесу будь-якої сфери. Туристичний бізнес опинився чи не в найскрутнішому становищі. Тому виникла гостра необхідність пошуку нових альтернатив існування та розвитку. Досить багато праць, як закордонних, так і вітчизняних, присвячено аналізу потреб сучасного туриста та пошуку нових трендів туристичної індустрії задля їх задоволення. Проте вони не охоплюють абсолютно всі зовнішні фактори, що можуть впливати на специфіку та розвиток туризму, зокрема ті, що пов'язані з військовими діями, які відбуваються в Україні.

Автори в своїй роботі наголошують на суттєвій необхідності цифрових трансформацій та розвитку цифрової культури. Оскільки цифровізація – це найшвидший спосіб виявлення, реагування та адаптації до внутрішніх й зовнішніх змін.

В статті авторами запропоновано етапи розвитку туристичної індустрії, які показують зміну вподобань туристів на протязі останніх 20 років, надані існуючі основні види туризму, детально представлені сучасні світові тенденції, появу яких спонукала постійно зростаюча індивідуальна потреба споживачів та пандемія COVID-19. А також наведено перелік майбутніх типів трансформації туристів, поява яких розрахована на період до 2030 року. Такі типи враховують майже всі вподобання, потреби та цілі споживачів туристичних послуг

Також авторами запропоновано новий вид туризму, в основі якого лежать військові дії в Україні та їх наслідки, який може стати майбутнім трендом туристичної індустрії. Поява нових напрямків та використання світових трендів, це ще одна додаткова можливість привабити нових споживачів туристичних послуг та отримати додатковий дохід за рахунок впровадження нових видів, нових турів, відвідування особливих міст та всього спектру послуг найкращої якості.

Ключові слова: туристична індустрія, види туризму, тренди туризму, майбутні види туризму, цифрова культура, цифрова трансформація

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GLOBAL CONSEQUENCES OF THE LOSS OF BUSINESS IN COUNTRIES AROUND THE WORLD CAUSED BY FRAUD

Abstract. Fraud is one of the types of financial crimes, which occupies an important place in the research of scientists from around the world. Relevance of this issue is growing rapidly, due to the increased level of losses in enterprises, institutions, banks, large corporations at both the private and state levels. The consequences from fraudulent activity leads to the loss of significant financial resources in enterprises, which causes a threat to their activities. The resolution of many of the criminal issues that are occurring is difficult, and therefore requires exchange of the experience of many countries worldwide.

According to Ukrainian legislation, there is a criminal responsibility for fraudsters, who misuse financial resources on a large scale and by their malicious actions provide to material damage of enterprises, banks and institutions in large amounts by their malicious actions.

To detect the fact of embezzlement, it is needed to conduct an internal audit in the company, which must be carried out by the relevant department, e.g.: security services department, involving internal audit or internal control; legal department; HR-service department.

Identification of the persons who may be involved in fraudulent actions is a complex issue for which there is a criminal responsibility. Different companies impose disciplinary liability, penalties or criminal liability on employees.

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The most vulnerable spheres of fraud are: banks, industry, construction, medicine, transport and procurement. It is in these sectors are concentrated most cash flows and there is no proper control of the inspection of counterparties. In addition, for such work must be professionally trained staff, the availability of which in large companies is small or completely absent.

More often than not, companies suffer from abusive actions of customers, competitors and co-workers of the company.

Keywords: *fraud in enterprises, confidentiality of information, copyright infringement, interference in enterprise data systems, data protection*

Introduction. The current conditions of economic development of the countries are characterized by various crises, which occur in the economy. The consequences of such crises are political phenomena in the country and beyond its borders, global economic crises, competitiveness, foreign policy, loss of business reputation and trust in enterprises, etc. One of these issues includes corporate misconduct in enterprises. That is why special attention is paid to research and monitoring of risks and threats that occur in enterprises through fraud. A large number of enterprises lose significant amounts of money as a result of various types of malpractice, business reputation, credibility and competitive position in the market, and sometimes the entire business. An inefficient system of internal control is the main reason for the emergence of risks and threats from corporate fraud.

Domestic and foreign researchers believe that every other company that has incurred financial losses and reported them has lost its reputation and credibility through corporate misbehavior.

Incidents of corporate malfeasance negatively affect the financial condition of the company, undermine its credibility and business reputation. The scale of fraud is growing quickly. Therefore, it is necessary to develop and implement more effective legislation and regulations that would regulate the fight against vandalism, development of measures for the functioning of the system of internal control in enterprises and sectors of the economy.

The research object is the processes of increasing the level of insecurity that affect the economic security of domestic enterprises and enterprises of the world.

The subject of the study detection of the consequences of losses in the enterprises of the countries of the world and creation of measures for their minimization and avoidance.

The purpose of this work the monitoring of the consequences of threats to business activities and measures to prevent them.

Formulation of the main material. Ukrainian companies often face questions about risks that were caused by negligence. Negative consequences of negligence lead to economic losses, inefficient management, low privatization of the company for investors, low level of corporate culture and significant financial losses, which are caused by negligence and lead to economic risks and closure of enterprises, companies, corporations.

Reliable and efficient development of the state depends on the economic development of the enterprise. Lack of effective monitoring and assessment of threats to the enterprise does not allow the enterprises to effectively develop a system of struggle, to reveal and prevent the facts of corporate misconduct in the future (Rybalchenko, L., & Ryzhkov, E., 2021).

Violations against the confidentiality and integrity of information, fraud,

copyright infringement, interference in the data systems of corporate enterprises, banks and institutions are becoming more common (Rybalchenko L., & Ryzhkov E., 2019).

According to research by the Association of Certified Fraud Experts (ACFE), the loss of professional fraud to enterprises is estimated at \$ 1.5 million, which is an average of 5 % of annual revenue. In 2020, there were 2504 cases of fraud in enterprises in 125 countries. Considering the period of fraud, which lasted about 14 months until they were discovered, the average loss of enterprises was \$ 8 300 per month.

In detecting fraudulent activities, companies prefer litigation and internal punishment, rather than the transfer of fraudulent crimes to law enforcement agencies. The number of companies that have chosen lawsuits has grown to 28 % in 2020 compared to 23 % in previous years. The number of appeals to law enforcement agencies decreased from 69 % in 2008 to 59 % in 2020. Most companies have taken steps to improve domestic discipline and civil justice rather than prosecute.

In recent years, the growth of order and requirements for improving internal discipline in enterprises has led to a reduction in fraud. The introduction of a hotline, the establishment of anti-fraud policies, and the strengthening of enterprise data protection tools have led to a 13 % reduction in the consequences of fraud.

Fraud is a global issue for businesses around the world. Professional fraud is often undetectable, so it leads to large-scale costs, which is a global threat. Figure 1 shows the number and percentage of cases of fraud in the world (Report To The Nations. 2021 Global Study On Occupational Fraud And Abuse).

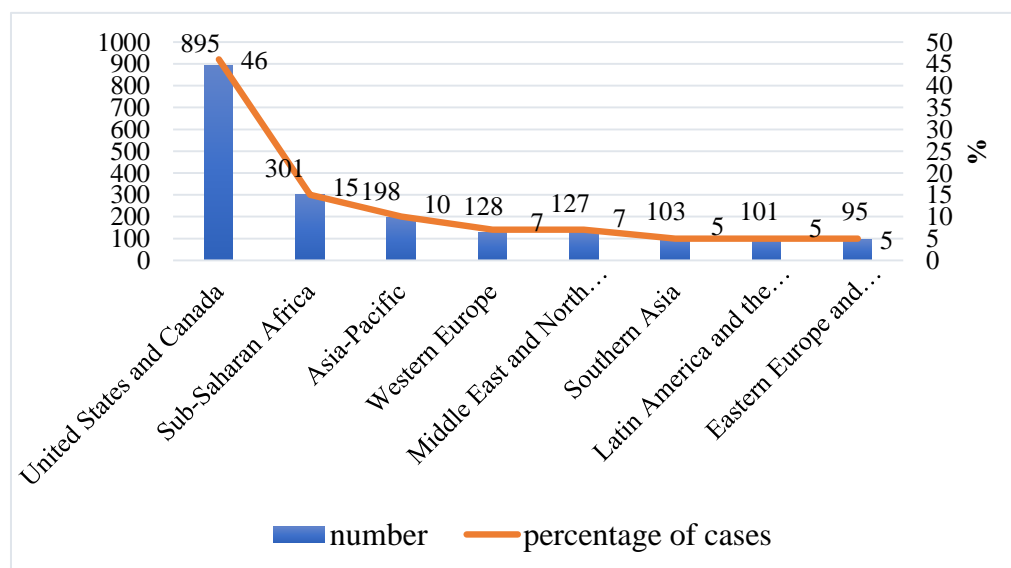


Figure 1 – Professional fraud in the world in 2020

Source: built by the authors according to the data (Report To The Nations. 2021 Global Study On Occupational Fraud And Abuse)

Losses from professional fraud are growing every year, which has a significant impact on the ability to create jobs, production of goods and services, providing reliable service (Figure 2).

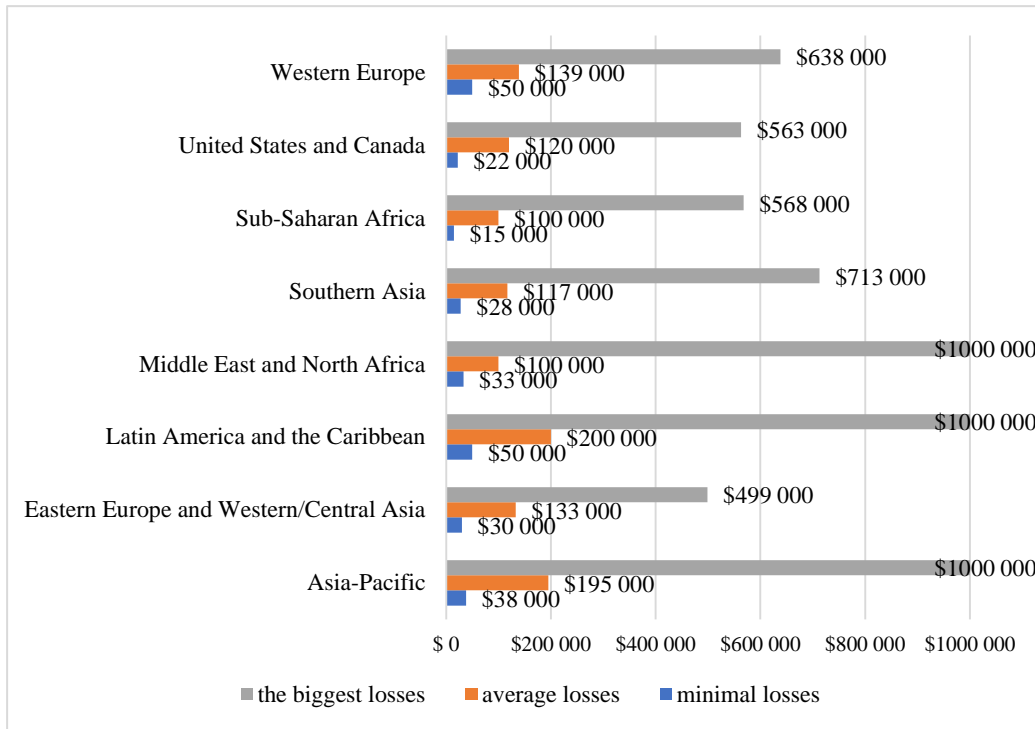


Figure 2 – Losses from fraud in the world in 2020

Source: built by the authors according to the data (Report To The Nations, 2021 Global Study On Occupational Fraud And Abuse)

There are three main categories of professional fraud. Misappropriation of assets, which includes theft by employees or misuse of resources by employers, which is the case in 86 % of fraud schemes. Such schemes lead to the smallest losses – 100 thousand US dollars. The second category of professional fraud includes corruption, which includes crimes such as bribery, conflict of interest and extortion, which cause financial losses to 43 % of enterprises with an average loss of 200 thousand US dollars (Report To The Nations. 2021 Global Study On Occupational Fraud And Abuse).

Financial reporting fraud is the lowest, in 10 % of cases, but leads to the largest losses, 954 thousand US dollars.

Examining the duration of fraud schemes, it must be said that not all fraud can be stopped and prevented. Even in the most dangerous enterprises, it is likely that in time, fraud will occur on the part of employees. Therefore, early detection of fraud is essential to protect the organization from potential threats and losses. The average duration of fraud from the beginning of fraud to its detection is 14 months.

Figure 3 shows that the longer the fraud remains undetected, the greater is the financial loss to the company.

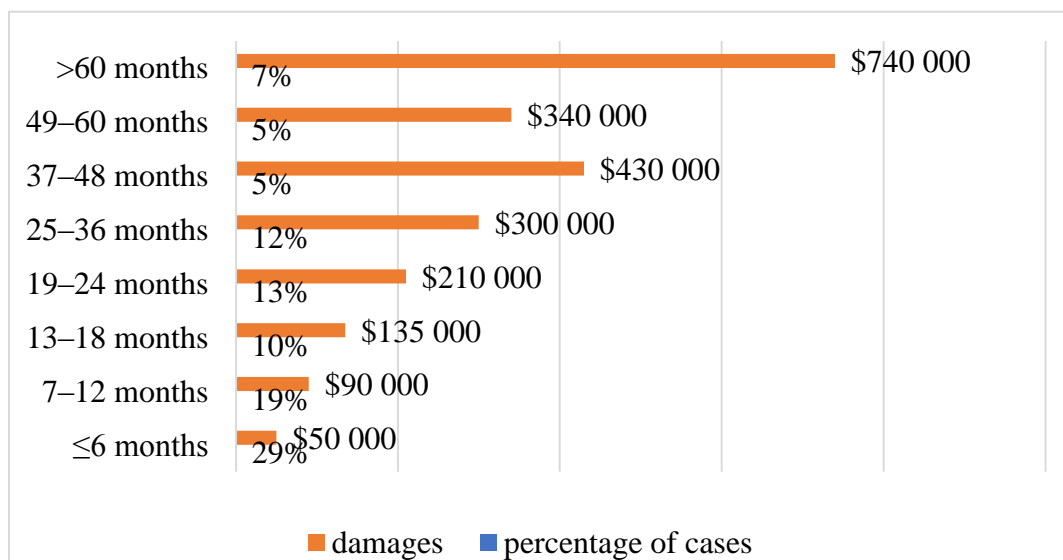


Figure 3 – Duration of fraud schemes and financial loss

Source: built by the authors according to the data (Report To The Nations. 2021 Global Study On Occupational Fraud And Abuse)

According to the speed of various professional fraud schemes, the fraud with financial reporting leads to the greatest loss, the average level of which is 39.8 thousand US dollars per month. Next are corruption schemes, with a loss of 11.1 thousand US dollars per month. It is these schemes that cause the greatest losses and occur very quickly. Therefore, companies need to take measures to create priority areas for rapid prevention and detection of such types of fraud.

The following types of fraud and their losses (per month) are:

- non-cash – 6 thousand dollars;
- falsification of checks and payments of 4.6 thousand dollars;
- billing – 4.2 thousand dollars;
- theft of cash 4.0 thousand dollars;
- skimming 2.9 thousand dollars;
- salary 2.6 thousand dollars;
- cash in the box office 1.7 thousand dollars;
- reimbursement of expenses 1.4 thousand dollars;
- registration of payments of 0.8 thousand dollars (General Prosecutor of Ukraine).

Thus, if the losses in the company are not so fast and their level is not so significant, the company has more time to stop such fraudulent actions.

Corporate fraud is an economic criminal activity that benefits from deception, trickery, abuse of trust, concealment of the truth, and so on.

Economic crimes are more common in countries where the level of shadowing of the economy is quite high. Corporate fraud is common in developed countries with high economies. Ukraine ranks sixth in the national ranking of corporate fraud (45 %); Russia – 1st place (71 %), South Africa – 2nd (62 %), Kenya – 3rd (57 %), Canada – 4th (56 %), Mexico – 5th place (51 %) (according to a study by PwC “Economic Crimes” during the economic downturn”). 59 % of domestic companies have been victims of economic crimes in the last two years, which is higher than the world average (43 %).

According to recent studies, 67 % of all fraud cases are committed by persons aged 31-40 years (*Report To The Nations. 2021 Global Study On Occupational Fraud And Abuse*). Employees (77 %) who work in the fields of finance, accounting, sales, procurement, and senior management have the best chances of fraud. According to Ukrainian companies, the most common types of corporate fraud are corruption, abuse of office and misappropriation of assets.

The high level of economic crime in society is due to the reasons for the imperfect structure of government, personnel policy, legal shortcomings, rising unemployment, rising prices for goods and services, high inflation and significantly lower wages.

The fraud level in enterprises is growing because the level of detection of such crimes is very low and difficult to identify. More often than not, corporate fraudsters commit crimes in large companies, so the losses of companies become very significant.

Fraud is a problem for corporations, manufacturing companies, organizations and institutions, misappropriating their assets, manipulating money, taking large amounts of them out of the country.

In 2020, about 70 % of all enterprises in the world suffered from professional fraud (*Report To The Nations. 2021 Global Study On Occupational Fraud And Abuse*), 44 % of which were private organizations and 26 % were public companies, 16 % were government enterprises and 9 % were non-profit. Private and public companies suffered an average loss of \$ 150 000, government ones losses \$ 100 000, and nonprofits suffered the least \$ 75 000.

Enterprises with annual revenues of less than \$ 50 million USA, have a loss of 114 thousand US dollars (this includes 38 % of enterprises). The biggest losses are enterprises (*Report To The Nations. 2021 Global Study On Occupational Fraud And Abuse*), whose revenue is more than 1 billion US dollars. US \$ 150 000 (26 % of enterprises).

Professional fraud leads to material loss, legal costs and can lead to bankruptcy. By creating a strategic plan and monitoring the planning of activities and development of the enterprise, you can reduce the risks that may occur in enterprises and take measures to avoid professional fraud. Modern policy of corporations and enterprises should be aimed at applying modern methods and tools to prevent fraud and ensure their sound economic development (“On National Security of Ukraine” Law of Ukraine of June 21, 2018 № 2469-VIII).

There are money laundering schemes published by the National Bank of Ukraine, which include (*Information and consulting platform*):

- “withdrawal of capital”. This scheme has little effect on the exchange rate and allows them to move outside the state;
- “cash transfer”. This scheme allows you to withdraw cash and is a form of payment for any work performed by an individual;
- “corruption”. This scheme belongs to illegal activities, is not regulated by economic laws and is aimed at committing crimes;
- “boiler”. These are transactions that are illegal and intended to transfer funds in cash. For this purpose the banking system is used and the interest for carrying out illegal operation is received, as a reward;
- “receiving cash”. Companies pay for raw materials for the manufacture of products and receive cash through the bank;
- “cash without cash”. Non-cash conversion without cash collection is

used.

It has been studied that the modern international practice of crime prevention is the most advanced, innovative and effective methods of combating crime and its individual manifestations mainly occur in developed and prosperous Western countries. This can be interpreted as:

1) the financial capacity of the government and law enforcement agencies, the competent authorities of these countries ensure the rule of law and maintain law and order;

2) it is connected with the existing scientific developments, established criminological traditions and theories, the basis of the practice of crime prevention;

3) long-term strategy for the introduction of public influence, the combatting crime through the formulation and implementation of various prevention plans and projects.

In recent years, there has been a general decline in crime in Europe, with a few exceptions. An analysis of data provided by Eurostat in 2020, as well as data from the latest edition of the European Collection of Crime and Criminal Justice Statistics, allows us to examine the level of crime and some of them: criminal activity in EU member states until 2019, including (*Eurostat – Crime statistics*).

In particular, the highest absolute indicators of the number of crimes recorded by the police in 2019 are observed in such EU member states as: Great Britain – 6.54 million, Germany – 6.5 million, France – 4.11 million, Italy – 2.23 million, Spain – 2.18 million crimes. The lowest absolute figures for the number of crimes registered in 2019 are: in Cyprus – 4.8 thousand, in Malta – 17 thousand, in Luxembourg – 26 thousand, in Latvia – 49.3 thousand, in Estonia – 53.3 thousand of crimes (*Eurostat – Crime statistics*).

Despite the rather optimistic trends in European crime, it should be noted that during 2017-2019, the number of convicts serving sentences in prisons increased in 17 of the 28 EU member states. At the same time, the number of police officers has increased in half of European countries during this period.

In the context of the crisis of EU migration policy, a significant increase in the number of illegal migrants trying to find employment in the most economically developed European countries, as well as increasing property crimes, European authorities are trying to strengthen the criminal justice system's response to recent crime in Europe.

Thus, as the analysis and generalization of the leading modern approaches to crime prevention in the leading European countries shows, the main element of this activity is not government repression for the committed crime, but the expansion of private sector participation. Society keeps silence in all its manifestations. This concept is based on:

- first, on a regulatory framework for crime prevention across Europe;
- secondly, on the criteria of economic feasibility, as it helps to save public spending on prevention through the use of free state aid;
- thirdly, it meets the requirements of those times, which are characterized by the humanization of criminal penalties and the expansion of prevention activities (*Eurostat – Crime statistics*).

Ensuring national economic security is based on the creation of political and legal international conditions of the country existence, providing free choice and implementation of strategic objectives of economic development, ensuring

the achievement of macroeconomic goals at national and regional levels by creating domestic subsystem of economic security and protection of economic entities from illegal encroachments, unfair competition with the use of forces and means of all government institutions of power, including the objects of protection (The crime rate in the world).

Ensuring the national economic security is one of the main functions of the state, which serves as a guarantee of state independence, implementation of the strategy of social and economic development, stability and reliable protection against possible threats (Fighting fraud: A never-ending battle. PwC's Global Economic Crime and Fraud Survey).

The economic security of the state is aimed at ensuring the independence of the national economy, creating stability and sustainability, ensuring effective economic development and improving the living standards of the population.

Legal guarantees for the economic security of the state are stable legal regulation of relations in all sectors of the economy, regulation of market relations, and prevention of economic and financial crises, minimization of shadow economy, reducing fraud and increasing product competitiveness (Report to the Nations on Occupational Fraud and Abuse. 2021. Global Fraud Study. Association of Certified Fraud Examiners, Inc).

The state policy on economic security must ensure the stable functioning of all its components. In addition, it should be aimed at reducing inflation, reducing external and domestic debt, the stability of the national currency, increasing incomes and improving the quality of life.

International economic security will contribute to the improvement of its international law on the basis of these principles through the conclusion of multilateral and bilateral treaties and agreements, the establishment and operation of international (especially interstate) organizations to promote cooperation and economic security of member states. The implementation of the concept of international economic security will ensure the cooperation of states in solving not only national problems but also global problems of mankind and will become the material basis of peaceful existence in the world, a guarantee of progress in eliminating economic backwardness of individual countries.

National economic security, at first glance, is the protection of the country's economy from dangerous influences, which can be both a deliberate source of danger and a consequence of natural market relations. Danger also arises when the economic situation of any state deteriorates to a critical level and so on.

Conclusions. Thus, at the state level it is important to develop appropriate mechanisms to monitor threats to economic security and develop measures to minimize them, improve existing legislation in the field of economic security, create a system to guarantee protection of economic security from possible threats, identify factors influencing economic security, will ensure the creation of sustainable economic development and a reliable competitive state in the international economic space.

To ensure an adequate level of national economic security, it is necessary to improve the legal regulation of the judiciary, which does not have the appropriate level of public confidence, protection from poor competition from monopolists and importers, reducing the shadow economy and shadow employment, preventing and combating corruption, control over the use of state and local budgets, increase professionalism and responsibility in the national

security and defense sector, and create a system for assessing risks and threats in the economic area for criminal prosecution of persons whose criminal activities threaten the economic security of the state.

Conflict of Interest and other Ethics Statements

The authors declare no conflict of interest.

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Людмила РИБАЛЬЧЕНКО, Едуард РИЖКОВ, Генадіє ЧОБАНУ

ГЛОБАЛЬНІ НАСЛІДКИ ЗБИТКОВОСТІ ПІДПРИЄМСТВ КРАЇН СВІТУ ЧЕРЕЗ ШАХРАЙСТВО

Анотація. Шахрайство виступає одним із видів фінансових злочинів, які займають важливе місце в дослідженнях вчених усіх країн світу. Актуальність цього питання щорічно зростає у зв’язку з підвищенням рівня збитковості на підприємствах, установах, банках, великих корпораціях, у приватних та державних компаніях. Злочинність від шахрайства призводить до втрати значних фінансових ресурсів на підприємствах, що спричиняє загрозу їх діяльності. Вирішення таких проблем є складним і потребує досвіду багатьох країн світу для їх усунення.

Згідно з українським законодавством, передбачено кримінальну відповідальність за шахрайство з фінансовими ресурсами, що завдають матеріальних збитків своїми злочинними діями підприємствам, банкам та установам у великих розмірах.

Для виявлення факту розкрадання у компанії необхідно проводити службові перевірки, які мають проводитися відповідними службами безпеки із залученням внутрішнього аудиту чи внутрішнього контролю, юридичного відділу, служби управління персоналом.

Виявлення осіб, причетних до шахрайських дій, є складним питанням, за неправомірні дії яких передбачено кримінальну відповідальність. Різні компанії залучають до працівників дисциплінарну відповідальність, штрафні санкції чи кримінальну відповідальність.

Найбільш уразливими сферами шахрайства є банки, промисловість, будівництво, медицина, транспорт та закупівлі. Саме у цих галузях сконцентровані найбільші потоки коштів і немає належного контролю за контрагентами. Крім того, для такої роботи має бути професійно підготовлений персонал, якого у великих компаніях мало або зовсім відсутні. Найчастіше компанії страждають від шахрайських дій клієнтів, конкурентів та співробітників компанії.

Ключові слова: шахрайство на підприємствах, конфіденційність інформації, порушення авторських прав, втручання у системи даних підприємств, захист даних.

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IMPROVING THE INFORMATION SYSTEM OF THE ENTERPRISE THROUGH THE USE OF NEURAL NETWORKS

Abstract. It is offered to consider practical aspects of application of neural networks (NN) in the marketing information system (MIS) of the enterprise. The aim of the research is to improve the information system of the enterprise by introducing an intellectual decision support system (IDSS) with the use of the neural network and considering its capabilities in forecasting the state of the marketing environment. As a result of the study, recommendations for the use of such an improved system have been developed and testing has been carried out in three directions. The first direction is the forecasting of the indicators of the macro environment of the company as the main factor of the marketing environment, by developing an appropriate mathematical model, in order to implement appropriate exit strategies for external markets. The second direction is the use of NN in forecasting the state of the elements of the internal environment of the enterprise, for example, an enterprise providing engineering services. The third direction the approbation proved the effectiveness of the application of NN for the forecast of macroeconomic indicators.

Consequently, the proposed subsystem of analysis and forecasting on the basis of the IDSS with the use of NN will enable to predict the indicators of the marketing environment of the enterprise. On this basis, managers will be able to make informed decisions based on the information foundation, adequate actions, skilled performance and, as a result, to ensure the success of the entire enterprise.

The specificity of the IDSS with the neural network proposed in the study is that decision support from different functional areas of the enterprise is supported on the basis of

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predictive results obtained through neural networks. The development of the proposed method is due to the need for training artificial neural networks for intelligent decision support systems, in order to process more information.

Keywords: *marketing environment, information system, neural network, decision making, forecasting*

Introduction. The urgency of the work is that the basis of the successful market activity of a modern enterprise is the marketing and MIS, which covers all functional areas of its activity, and which becomes an important foundation in making strategic and tactical marketing decisions. The use of artificial intelligence capabilities through the implementation of the IDSS in the MIS of the enterprise will provide management with high-quality information to make effective management decisions, which, in turn, will increase the competitiveness of the firm in the market. However, the use of neural network capabilities has not yet been sufficiently studied and has not become widely used in Ukrainian enterprises. At the same time, the possibilities of neural networks are gaining more and more sectors of the economy, precisely because of the relative ease of application and quality of results in modeling and forecasting of economic processes and market situation.

The specificity of the IDSS with the neural network proposed in the study is that decision support from different functional areas of the enterprise is supported on the basis of predictive results obtained through neural networks. Such an MIS will ensure the adaptation of the enterprise to changes in the environment, will enable, through the introduction of a subsystem of analysis and forecasting with embedded IDSS based on the NN to monitor, accumulate information for further training NN. Trained NN will allow IDSS to analyze the status of the marketing environment, assess the extent, nature and direction of its impact on the company's position in the strategic perspective. Ultimately, the functioning of a full-fledged marketing information system should orient the management of the company to choose the most optimal marketing strategy (from the list of strategic alternatives), and will enable the systematic tracking of marketing positions and provide options for making the necessary corrective measures in case of changes. At the same time, such an MIS will allow to accumulate insufficient data and provide continuous monitoring, training and provision of already prepared information to managers of all levels for decision making, taking into account changes in the main environmental factors in the dynamics.

Analysis of recent research and publications. The research of the use of neural networks was carried out by domestic and foreign scientists: Kalantaievska S., Pievtsov H., Kuvshynov O., Shyshatskyi A., Yarosh S., Gatsenko S. (2018), Kuchuk, N., Mohammed A., Shyshatskyi A., Nalapko O. (2019), Zhang J., Ding W. (2017), Katranzhy L., Podskrebko O., Krasko V. (2018), Manea E., Di Carlo D., Depellegrin D., Agardy T., Gissi E. (2019), Çavdar A., Ferhatosmanoğlu N. (2018), Kachayeva G., Mustafayev A. (2018) et al.

The questions of application of informational-analytical decision-making systems were investigated both by foreign and domestic scientists: Bratushka S., Demydenko M., Sytnyk V., Subbotin S., Shchavelov L., Synytsina Yu. (2019), Kaut O., Fonareva T. and others.

The problems of building the MIS of the company are covered in works Frolenko O. (2014), Panukhnyk Ya., Sokhatska O. (2005), but the

improvement of the MIS precisely with the use of IDSS based on neural networks is not highlighted. In (2017), a study was carried out on the mathematical model of forecasting macroeconomic indicators of the economy of Ukraine, but The questions of the role of neural networks for forecasting processes of the internal environment of the enterprise are not covered.

Therefore, improvement of the information system of the enterprise through the implementation of the IDSS on the basis of the NN will solve the problems that cover all aspects of the enterprise. The analysis showed that the main difficulties in the way of even more widespread neurotechnology are the lack of practical developments and recommendations for using their capabilities in marketing and personnel management, the inability of a wide range of professional managers to use the NN and formulate their problems in terms of understandable for systems with artificial intelligence.

The purpose of this work is improvement of the information system of the enterprise through the implementation of the IDSS on the basis of the NN.

Formulation of the main material. Rigid statistical requirements for the characteristics of time series limit the possibilities of methods of mathematical statistics, the theory of image recognition, theories of random processes, etc. The fact is that most real processes can not be adequately described using traditional statistical models, since they are essentially nonlinear and have either a chaotic or quasi-periodic or a mixed basis. In this case, special artificial networks can serve as an adequate apparatus for solving problems of diagnostics and forecasting, implementing the ideas of forecasting and classification in the presence of learning sequences.

Neural Network (NN) – a collection of neural elements and connections between them. The main element of the neural network is the formal neuron, which performs the operation of non-linear transformation of the sum of the inputs of the input signals into weight coefficients. Different learning algorithms and their modifications are used to teach the network. It is very difficult to determine which learning algorithm will be the fastest in solving a particular task. The most interesting for us is the algorithm of reverse error propagation, as it is an effective means for teaching multilayer neural networks of direct distribution.

It is also known to use the algorithm of error backpropagation for automatic analysis of electrocardiograms in the diagnosis of cardiovascular diseases in the works of the authors Kachayeva G., Mustafayev A. (2018) and to detect the occurrence of avalanches by Zhdanov V (2016).

The algorithm minimizes the mean square error of the neural network. To do this, in order to set up synoptic bonds, the method of gradient descent in the space of weight coefficients and thresholds of the neural network is used. In order to accelerate the learning process, instead of the constant learning step, it is suggested to use the adaptive learning step $\alpha(t)$. The algorithm with an adaptive learning step works 4 times faster. At each stage of the network learning, it is selected in such a way as to minimize the square root of the network error (Sokhatska, O., & Romanchukevych, M., 2005).

For prediction of systems based on NN, the best quality is shown by a heterogeneous network consisting of hidden layers with a nonlinear activation function of the neuronal elements and the output or linear neuron. The disadvantage of most of the considered nonlinear activation functions is that

the range of their initial values is limited by the segment $[0,1]$ or $[-1,1]$. This leads to the need to scale the data, if they do not belong to the above range of values. In the paper, we propose to use a logarithmic activation function for solving prediction problems, which allows obtaining a forecast much more accurately than using a sigmoid function.

The architecture of the neural network plays an important role for the network learning efficiency. We used a three-layer neural network, which allows to approximate any function with arbitrarily given accuracy. Accuracy is determined by the number of neurons in the hidden layer, but with too much dimension of the hidden layer may occur a phenomenon called redistribution of the network. To eliminate this disadvantage it is necessary that the number of neurons in the intermediate layer is significantly less than the number of training images. On the other hand, with a very small dimension of a hidden layer, you can get into an undesirable local minimum (Sokhatska, O., & Romanchukevych, M., 2005).

This study is aimed specifically at the development of specific recommendations for the application of NN in the enterprise information system.

In a changing economic environment, it is very important not only to analyze the state of macroeconomic indicators but also to be able to predict their state for the future. Therefore, forecasting of macroeconomic indicators with the help of models becomes an integral part of the strategic planning of the development of any organization or state in general. The modeling of economics based on the LAM (Long-run Adjustment Model) has been developed to model and forecast the economies of Eastern European countries during the transition period. The research used the LAM 3 model. This model is considered as a small model whose purpose is to analyze and short-term (quarterly) forecast of the main macroeconomic indicators: GDP, imports, exports, consumer price index, income and consumption indicators, investments, average income per capita and employment, unemployment, demand for money and others. The model is easy to manage and easy enough to accompany. There is an opportunity for quick access to the correction of the model when new data is available. The structure of the model for different national economies does not change, it differs only in the input parameters. The model itself consists of 25 equations: four of them describe long-term dependencies, twenty one is short-term. The basis of the LAM-3 model is the bilinear autoregression vector (Bilinear Vector AutoRegressive model – BiVAR).

Thus, the authors developed an econometric macromodel for analysis and short-term forecasting of aggregate demand in Ukraine, including endogenous and exogenous variables.

Endogenous variables are GDP; final consumption of households and non-profit organizations that serve them; final consumption of government institutions; gross accumulation; export of goods; import of goods; export of services; import of services; foreign trade balance; cash income of the population; labor remuneration of employees; balance of purchase and sale of foreign currency.

The exogenous variables in the macro model are the nominal exchange rate of the UAH relative to the US dollar; nominal tariff rate of the first category; average number of employees employed in the economy; nominal

average wage of one employee; labor productivity (Synytsina, Yu., & Kaut, O. et al., 2019, Savchuk, L., & Bushuyev, K., 2017).

These interconnections are of crucial importance for choosing key policy orientations in Ukraine, therefore, they are represented in a macro model by a system that includes autoregressive equations of GDP deflator, money supply (M2). The macro model is also supplemented by the regression equation for the foreign exchange purchase and sale balance indicator (Synytsina, Yu., & Kaut, O. et al., 2019, Savchuk, L., & Bushuyev, K., 2017).

The basis of the macro model was the well-known Keynes equation, according to which GDP can be obtained by the end-use method (Synytsina, Yu., & Kaut, O. et al., 2019, Savchuk, L., & Bushuyev, K., 2017):

$$gdp_t = fchn_t + fcg_t + gcf_t + saldo_t \quad (1)$$

where: gdp_t – GDP;

$fchn_t$ – final consumption of state farms and non-profit organizations that serve them;

fcg_t – final consumption of government institutions;

gcf_t – gross accumulation;

$saldo_t$ – net exports of goods and services.

When constructing an econometric model of final consumption of households and non-profit organizations serving them, factors are taken into account cash income of the population and accumulation of savings in deposits, securities, balance of sale of foreign currency by banks, (Savchuk, L., & Bushuyev, K., 2017), that is:

$$fchn_t = f_1(MINC_t, ASAV_t) \quad (2)$$

In the standard version of the macromodel, this equation also took into account the influence of the nominal UAH against the US dollar (EU_t). Since cash foreign currency in hands and on accounts with banks is one of the forms of saving of the population of Ukraine, it is necessary to take into account the influence of the nominal exchange rate during the modeling except for the previously mentioned nominal UAH against the US dollar, affect the cash income of the population (Savchuk, L., & Bushuyev, K., 2017):

$$ASAV_t = f_2(MINC_t, EU_t) \quad (3)$$

A separate element of the macro model is the regression dependence of real cash income of the population on its level in the previous period and the payment of employees (Synytsina, Yu., & Kaut, O. et al., 2019, Savchuk, L., & Bushuyev, K., 2017):

$$MINC_t = f_3(CE_t, MINC_{t-1}) \quad (4)$$

The most significant factors determining the payment of labor are productivity (p_t), tariff rate of the first category (WRt) and the average number of employed employees ($anet$). Taking into account the above model will look

(Synytsina, Yu., & Kaut, O. et al., 2019, Savchuk, L., & Bushuyev, K., 2017):

$$CE_t = f_4(p_t, WR_t, ane_t) \quad (5)$$

Another component of aggregate demand is the final consumption of state institutions. For this indicator, the following econometric models were developed: a model from tax revenues to the budget; model of consolidated budget expenditures; model from the tariff rate of the first category; model of the number of employed in the public sector of the economy (Synytsina, Yu., & Kaut, O. et al., 2019, Savchuk, L., & Bushuyev, K., 2017).

Neural network programming was used to perform practical calculations and further analysis of the results. This is due to the fact that the rigid statistical requirements for the characteristics of time series limit the possibilities of methods of mathematical statistics, the theory of pattern recognition, theories of random processes, etc. The fact is that most real processes can not be adequately described using traditional statistical models, since they are essentially nonlinear and have either a chaotic or quasi-periodic or a mixed basis.

In this case, an adequate device for solving problems of diagnosis and forecasting is the special artificial networks implementing the ideas of forecasting and classification in the presence of learning sequences, and, as a very promising, it is worthwhile to note the radial-basic structure, the distinguishing factor of which is high learning speed and universal approximating capabilities (Sokhatska, O., & Romanchukevych, M., 2005).

Investigating the MIS of Ukrainian enterprises for some time, the authors came to the conclusion that they mostly have a marketing information system of open architecture and support a strategy for gradually increasing its functional capabilities. As a rule, the company's MIS model has a standard appearance, i.e. information is provided on the input from the external and internal environment of the enterprise, from it the database is formed, further through the means of information processing, namely software and hardware, are submitted to the output and used for the adoption of appropriate management making decisions. The analysis of the MIS of the enterprises revealed a number of shortcomings that the company inevitably encounters, namely: deficit of the necessary or excess of unnecessary information; dispersal of information in different divisions of the enterprise, which makes it difficult to find it; concealing information by employees, which may indicate disadvantages in their work; late arrival of important information; the impossibility of determining the completeness of information, accuracy, etc.; Output information is not prepared, i.e. not grouped and not systematized properly for making marketing decisions (Synytsina, Yu., & Kaut, O. et al., 2019, Savchuk, L., & Bushuyev, K., 2017).

To enhance the system's capabilities, the authors proposed to improve its subsystem of analysis and forecasting by creating an intellectual decision support system (IDSS). The authors propose a schematic diagram of such an IDSS using neural networks.

Proceeding from the priorities of the company, the software product created will allow modeling and forecasting macroeconomic indicators of both the internal and external market on which the firm plans to work. Also, one of the main tasks of the enterprise is to take part in tenders for automation of

production at large industrial enterprises. Therefore, the problem of calculating the projected cost of the project for the provision of engineering services for automation and adjustment of equipment becomes acute.

The specificity of the IDSS with the neural network, which is proposed in the work, is that the analysis and selection of marketing decisions is carried out on the basis of the predictive results obtained with the help of neural networks. The user interface is a software suite, which should provide a simple and convenient interaction between the system and the end user. It includes various scripts (menus) of work.

At the same time, the work of the user, in the role of which is an manager, is to enter the necessary input data to get the predictive value using the IDSS, based on which will be made a managerial decision.

Approbation of the proposed improvement was carried out in two directions:

– firstly, the possibility of analyzing the macroeconomic environment of the enterprise and forecasting macroeconomic indicators were carried out on the example of Ukraine, for this purpose the data of the State Statistics Committee and the corresponding econometric model were used;

– secondly, one of the complex tasks for engineering services companies was solved, namely, the projected cost of the project on the automation of the cotton pressing line for the enterprise of Uzbekistan was calculated, which will provide access to the foreign market.

Let's consider in more detail the results of approbation in three directions.

The implementation of the model experiment and the analysis of the results of the experiment was carried out on an example of the analysis of the macro environment of the enterprise. The model of the LAM-3 series based on international trade equations was used in the work. The model is easy to manage and easy enough to accompany. There is an opportunity for quick access to the correction of the model when new data is available. The structure of the model for different national economies does not change, it differs only in the input parameters. The model itself consists of 25 equations: four of them describe long-term dependencies, twenty-one short-term. The basis of the LAM-3 model is the bilinear vector auto regression model (BiVAR).

The statistics were compiled on the basis of selected indicators of the model for the period from 1991 to 2020. To perform practical calculations and further analysis of the results, the following software was used:

1. The EXCEL package, for statistical analysis and calculation of parameters and criteria of the simplified macroeconomic model of the Ukrainian economy.

2. Own software product developed, which allowed obtaining the forecast value of Ukraine's Gross Domestic Product (GDP) for a certain year, and analyze various algorithms of training neural networks for predictive quality, to investigate various structures of neural networks and compare results

(Synytsina, Yu., & Kaut, O. et al., 2019, Savchuk, L., & Bushuyev, K., 2017). The software interface is shown in Figures 1, 2, 3.

The prognostic value of the macroindicator is shown in Figure 3, where the red line is the projected value of GDP, and the blue is the real GDP.

Thus, with the help of neural networks, the forecast value of GDP was obtained. For each structural equation, the neural network was used for the corresponding statistical data for the period of 28 years. To teach neural networks, as already noted, the user can use two learning algorithms: genetic and reverse error propagation, and different types of neural networks: based on radial-basis functions, multilayer perceptron with sigmoid activation function.

Here are some important parameters for setting up training algorithms and neural networks in general:

1. For the genetic algorithm, the following probabilistic parameters were chosen: probability of mutation, and we perform crossover of random individuals at every step, because our statistics have a limited number, then there is no need for a longer study. Number of individuals in the population 50. Training continues until the error of the most adapted individuals will not provide the necessary accuracy.

2. In the algorithm BP error rate of learning is 0.01. The training is a given number of iterations (200 iterations).

3. In the radial-basis neural network, we use the Gaussian function as an activation function.

4. In a multilayer perception, we use the activation function of the hyperbolic tangent.

In order to determine the structure of the neural network conducted test tests. So, for the input of the neural network, we always have the number of independent variables of the corresponding structural equation.

$$\begin{aligned}
 &gdp = f_{chn} + f_{cg} + gcf + saldo \\
 &1. f_{chn} = f_1(MINC, ASAV) \\
 &2. ASAV = f_2(MINC, EU) \\
 &3. MINC = f_3(CE, MINC(t-1)) \\
 &4. CE = f_4(p, WR, ane) \\
 &5. gcf = f_5(gdp(t-1)) \\
 &6. saldo = f_6(XG, XS, MG, MS)
 \end{aligned}$$

Figure 1 – Structural form of the developed macroeconomic model of Ukraine

Figure 1 presents the structural form of the developed macroeconomic model of Ukraine (for the corresponding notations and formulas see above).

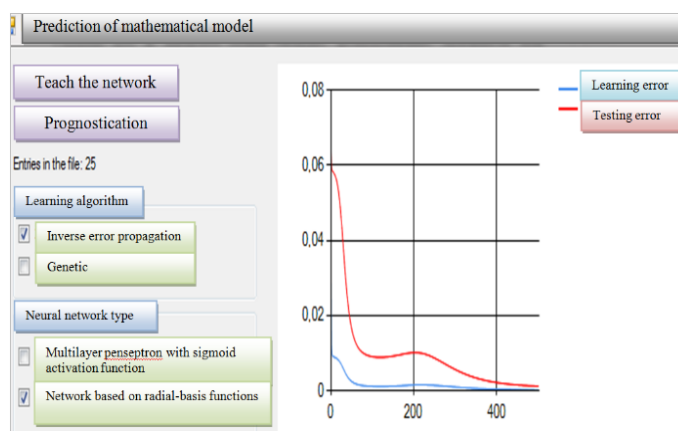


Figure 2 – Neural Network Training Schedule (Synytsina, Yu., Kaut, O., & Bushuiev, K., 2019)

But to determine the number of neurons in the hidden layer, test runs were performed and given for each pair (algorithm, type of network).

For each pair (algorithm, type of network) training was performed and the results recorded. Analyzing them, we arrive at the conclusion that the best predictive properties for a constructed mathematical model of macroeconomics of Ukraine demonstrate a genetic algorithm using radial-basis functions of the algorithm Back propagation. The obtained percentage error for our statistical sample based on the constructed mathematical model can be considered acceptable.

The developed software product, based on neural networks based on statistical data, allows to predict macroeconomic indicators not only of Ukraine and other countries when the company leaves the relevant foreign markets.

Consider approbation of the developed software product in the second direction of research. Consequently, the definition of the project price, that is, the calculation of the cost of engineering services is one of the most difficult issues that is agreed upon between the customer and the executor (consultant) at the stage of contracting. This is due to the variety of services provided and their non-standard, impossibility to pre-set the final amount of work required and the total amount of costs associated with their implementation. Therefore, the cost of services, which was determined at the stage of contracting, can be adjusted in accordance with actual costs at the end of the work.

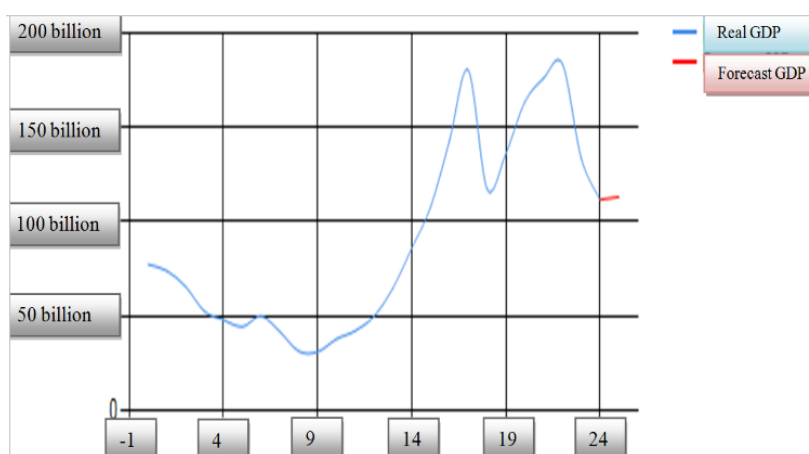


Figure 3 – Forecast value of the macroeconomic indicator (Synytsina, Yu., Kaut, O., & Bushuiev, K., 2019)

Consequently, we will calculate the forecast value for the provided engineering and consulting services for the automation of the cotton pressing line for enterprises in Uzbekistan. In order to successfully enter this foreign market, the company must submit a project with a predetermined forecast value, which would ensure the competitiveness of the company in obtaining a tender for the execution of works. To do this, we use the method of calculating the remuneration for the provided engineering and consulting services at actual costs plus a fixed remuneration.

The manager has the projected cost of equipment, the cost of installation work, equipment adjustments, the number of workers who will carry out installation and adjustment, the expected amount of wages for workers, all

taking into account the projected UAH exchange rate. So, in the end, we received the projected cost of the project, which is 396 448 UAH.

Stages of such accounting using NN are presented in Figure 4.

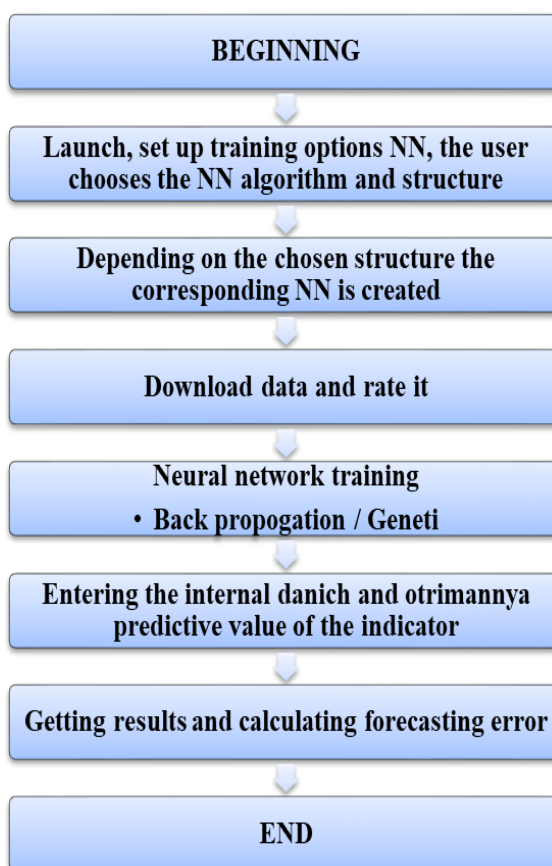


Figure 4 – Stages of the work of the software product .

Conclusions.

1. The marketing information system of the enterprise, which includes the subsystem of observation and research and the subsystem of analysis and forecasting, is developed. Such a MIS will ensure the adoption of more informed marketing decisions and obtain on this basis more profits of the company.

2. The introduction of IDSS based on NN, which allows to take the most important decisions in an interactive mode, will allow to analyze, plan and control various marketing actions and design them on the basis of “what if”. As a result, a large range of rather complex tasks, which previously could only be performed by skilled professionals in the field of marketing and management, with the help of IDSS can also be implemented by specialists of related divisions.

3. The created software provides training of the neural network based on the input data for previous years and allows the trained neural network to make a forecast of the indicators of the enterprise.

4. Verification of the developed software product is carried out. The results of the approbation proved the effectiveness of the application of NN for the forecast of macroeconomic indicators.

5. The capabilities of a software product based on NN tested in the enterprise to provide engineering services, namely, the cost of the automation project was predicted to participate in the tender for the receipt of an order. The results prove the effectiveness of using such a product in the enterprise.

The obtained results prove the necessity of continuous updating of the marketing information system of the enterprise in accordance with the modern development of information technologies and their introduction in order to make more informed marketing decisions and obtaining on this basis a greater profit of the company, which will ensure sustainable development of the company.

Conflict of Interest and other Ethics Statements

The authors declare no conflict of interest.

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УДОСКОНАЛЕННЯ ІНФОРМАЦІЙНОЇ СИСТЕМИ ПІДПРИЄМСТВА ШЛЯХОМ ВИКОРИСТАННЯ НЕЙРОМЕРЕЖІ

Анотація. У статті проведено дослідження використання нейронних мереж у інтелектуальній системі підтримки прийняття рішень на підприємстві та сформульовано модель аналізу, а також дослідження можливостей нейромережевих методів прогнозування в інтелектуальній системі підтримки прийняття рішень у процесі управління підприємством. Запропоновано розглянути практичні аспекти застосування нейронних мереж (НС) у маркетинговій інформаційній системі (МІС) підприємства. Метою дослідження є удосконалення інформаційної системи підприємства шляхом впровадження інтелектуальної системи підтримки прийняття рішень (IDSS) з використанням нейронної мережі та врахуванням її можливостей у прогнозуванні стану маркетингового середовища. За результатами дослідження розроблено рекомендації щодо використання такої вдосконаленої системи та проведено випробування за трьома напрямками. Перший напрям – прогнозування показників макросередовища компанії як основного фактора маркетингового середовища шляхом розробки відповідної математичної моделі, з метою реалізації відповідних стратегій виходу на зовнішні ринки. Другий напрям – використання НН при прогнозуванні стану елементів внутрішнього середовища підприємства, наприклад, підприємства, що надає інженерні послуги. Третій напрям апробації довів ефективність застосування НН для прогнозу макроекономічних показників.

Отже, запропонована підсистема аналізу та прогнозування на основі ІСС з використанням НН дозволить прогнозувати показники маркетингового середовища підприємства. На цій основі керівники зможуть приймати виважені рішення на основі інформаційної основи, адекватних дій, кваліфікованого виконання і, як наслідок, забезпечити успіх всього підприємства. Специфіка IDSS із запропонованою в дослідженні нейронною мережею полягає в тому, що підтримка прийняття рішень з різних функціональних областей підприємства підтримується на основі прогнозних результатів, отриманих за допомогою нейронних мереж.

Ключові слова: маркетингове середовище, інформаційна система, нейронна мережа, прийняття рішень, прогнозування

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PROJECT MANAGEMENT AS A TOOL IN PREVENTION OF JUVENILE DELINQUENCY

Abstract. Problems of prophylaxis against crime among minors, interaction of the authorized bodies, parents and other persons responsible for education of children are analyzed in the article.

Authors note that globalization considerably strengthens action of crime in this sphere and, therefore, introduction of new approaches on their prevention, including application of project management is required.

Experience of the Republic of Kazakhstan on introduction of project management in

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public administration, including in activity of bodies of prosecutor's office is briefly described in the article.

Thus, the separate example of use of basics of project management in prevention of teenage crime, starting with conducting of the criminological analysis and decision-making in the choice of preventive methods on eradication of these illegal acts; and also what negative and positive aspects prosecutors have faced in this direction.

Strengthening of responsibility of authorized bodies, parents and also their activization (diligence) and unity during implementation of the project is noted in the article.

Also the successful result of implementation of the Project "On Counteraction to Offences in Educational Institutions", and persuasion of local bodies about the importance of the matter and allocation of the significant funds for equipping of all schools of the regional center with video surveillance is described.

Authors assess behavior of people during project implementation and their interest based on the theory of "Hawthorne effect".

Authors believe that the main role in rise in crime among teenagers is linked with wrong choice of measures for their prevention, lack of criminological researches and also regulating norms of interaction between parties responsible for education of children.

Keywords: *crime, minors, project management, teenage crime, prophylaxis, criminology.*

Introduction of project management is not only the tool for successful implementation of the state investment projects, it also is one of instruments of optimization of time, financial expenses and human resources in whole public sector, including the law-enforcement block, since project management means a new, team oriented, collaborative way of interaction.

Importance and relevance of introduction of this approach in public administration, are connected, first of all, with high speed economic processes both in the world, and within separately taken country: the goals set are becoming more ambitious, and tasks are becoming more large-scale, and budgets are being reduced. At the same time priorities of society are displaced: consumers of public services demand results, quality, and speed that in turn directly influences trust of the population towards the authorities.

The fact that in December, 2016 B. Obama signed the legislative act for creation and introduction of standards of program and project management in activity of federal authorities once again proves the importance of this direction. In our opinion, the specified reforms in the modern world form new practice of project management (The Program Management Improvement and Accountability Act, 2016).

However, it is necessary to understand that blind copying of what is done by other countries in the field of project management can lead to negative result. Experience of each country is unique and what has turned out successful in one state, doesn't guarantee the same result in another state. Studying of experience of the governments of other countries can only help to designate the directions of moving, to avoid mistakes, to prevent possible risks. The main thing is to increase own potential in this sphere.

Thus, in this article we wanted to share our experience of new management approaches application in providing law and order among minors while assessing at the same time a possibility of its scientific and practical application.

Analysis of recent research and publications. In Kazakhstan a subject of introduction of project management in activity of public authorities has found the approval at the highest level, the Prosecutor General's Office of the Republic of Kazakhstan became one of initiators among public authorities.

It should be mentioned that the project of the Prosecutor General's Office of Kazakhstan about decrease in the prison population became the winner of the international contest "Project Olympe" in Moscow, also other four projects of the Prosecutor General's Office took winning places in the different nominations of this contest.

In this regard, it is possible to claim that in our country there is a successful experience in this direction.

We know that there are fields of sciences (*psychology, sociology*) that study behavior and mental processes of the person as individual, regularities of social actions and mass behavior of people and also the relations between the individual and society.

However, authors of the book "Organizational Behavior" S. Robbins and T. Judge write about last century's opening by scientific community of the new relations of people connected with their work (S. Robbins, & T. Judge, 2012, pp. 4-15).

This type of the relations needed studying and systematization of processes arising between people in a workplace.

The understanding has come that the success of the organization does not consist of technical aspects of management (*with the emphasis on economy, accounting, etc.*), but it consists of realization of human resource by understanding of their behaviors.

In our opinion, in confirmation of this belief, the Prosecutor General's Office of Kazakhstan has started transformation with personnel issues of the structure (*improvement of selection process, the system of personnel training, etc.*).

Indeed, the specified innovations which introduction probably promised unwillingness of these changes by employees were antithetical to the "conservative" body, which had its own history and the acquired practice, therefore it was required to change, first of all, consciousness of staff on which the success of implementation of the whole project depended. It was necessary to create spirit of "a new format" employee.

In this connection, a number of essential reforms have been implemented starting with adoption of the new Law "About Prosecutor's Office" (The law "About the Prosecutor's Office" of the Republic of Kazakhstan dated 30.06.2017, no. 81-VI) according to which there were changes in the structure of bodies of the Prosecutor General's Office and etc., on which we wouldn't want to focus, but to stop in more details on a separate example and highlights of project management, which specifically have affected our understanding of solution of current problems of society and also effective use of personnel potential.

Thus, the Attorney-General has noted that "one of the reasons of low trust of the population towards the bodies of prosecutor's office – weak staff, deep-rooted structure, outdated methods of work on statistics, non-involvement of citizens into ensuring public order ..." (A speech of the Attorney-General of the Republic of Kazakhstan from a board meeting based on results of work in the first half of 2016, 2016).

For change of a situation he has suggested to introduce project approach into work, by decentralization of management of regional prosecutor's offices and also delegation of powers to them for independent definition of contentious issues of the region and a way of their optimal solution.

Thereby, the delegation purposes, lying in management bases, such as

activation of “a human factor”, increase of capability of subordinate levels and also reducing of workload of higher level heads were implemented, that allows creating the best conditions for the solution of strategic and perspective tasks (Soldatova, Yu., & Chernyshev, A., 2012).

From our point of view, this approach was correct as the feeling of the involvement and special responsibility of employees for the undertakings increased, and the field has been given for realization of their internal desires in the choice of issues and application of methods for their elimination.

As a result, in our opinion, the theory of “The Hawthorne effect”, at which conditions in which novelty, interest in an experiment or special attention to an innovation lead to distorted, often to favorable result, has found its confirmations. Participants of an experiment act differently, more diligently, than usually, only thanks to understanding that they are involved in process. As a result of an experiment it has been proved that change of conditions of social and psychological climate exerts a greater influence on productivity, than many technical aspects of production (J. Goodwin, 2004, pp. 232-233).

So, while complying with the message of the Attorney-General, the bodies of Prosecutor’s Office of the Kyzylorda region started to introduce actively the principles of project management in supervising activity.

Eight projects directed to systematization of work both in the sphere of public prosecutor’s supervision, and in activity of representatives and the interested bodies are developed and implemented today.

These innovations were created on basic elements of the innovative project, such as formulations of the goal and task reflecting basic purpose of the project, the implementation time period, a complex of actions for the solution of set tasks, organization of execution, i.e. their coordination for resources and performers, the definitions of indicators characterizing efficiency of the project implementation (Gorfinkel V., & Popadyuk T., 2016, p. 136).

The indicators of projects implementation were set as tasks of making of significant contribution to implementation of the Concept of Kazakhstan's joining top 30 developed countries of the world by the forced decrease in crime, improvement of investment climate, increase in level of credibility of the population to the power structures, their activity in public administration, ensuring public safety, in particular among minors and also solution of separate social problems of citizens.

Earlier prosecutor paid less attention to establishment of the main reasons for emergence of any given problems, solving only superficial consequences of their emergence, which is why some questions didn't find the due solution from year to year, bearing at the same time systematic character.

Formulation of the main material. Taking into account that project approach provides large allocation of efforts and funds at a preparatory stage, we were faced by the main objective to establish the concrete causes of pressing problems by carrying out the in-depth analysis and to apply effective measures in order to solve them.

Insufficiency of the work carried out by authorized bodies on prophylaxis of teenage crime was determined based on the analysis of a condition of offenses, which was carried out by prosecutor’s office of area among minors in the region. The decision was made on initiation and further implementation of the project “On Counteraction to Offences in Educational Institutions”.

Mission of the Project was ensuring the maximum safety of minors and decrease in crime by means of innovations and attraction of the greatest number of interested parties (*pupils, parents, etc.*).

Project bases. Level of threats of life and health of the person has considerably grown in recent years; objects of the increased risk from the point of view of safety are the educational organizations.

Threats to security in educational institutions can be divided into two categories.

The first is a threat of the personality, commission of crime, offenses, insult of action, stealing, accident and natural disaster, which can do physical or moral harm to pupils, teachers and employees.

The threats connected with damage to property and effects belong to *the second* category: the vandalism, thefts, other crimes causing damage to school property and personal belongings of pupils.

The Project goal is to reduce the crime in educational institutions for **60 %** until 2018, introduction of new approaches of work of educational institution on prophylaxis of offenses and crimes among pupils.

Project tasks:

- reduction of number of offenses and crime among and towards minors;
- prevention of the facts of cruelty and violence against minors;
- prophylaxis and prevention of emergency situations (fires, technogenic catastrophes);
- prophylaxis and prevention of acts of terrorism;
- prophylaxis and prevention of acts of violence from the third parties (mentally unhealthy, being in a condition of alcoholic or drug intoxication);
- decrease in workload of pedagogical workers;
- decreasing of workload of law enforcement bodies;
- strengthening of evidentiary base;
- reducing of conflict intensity in educational institutions;
- rising of culture of behavior;
- decreasing of number of insubstantial accusations to the staff of educational institutions;
- educating pupils of moral and legal conviction, law-abiding behavior and basics of tolerance;
- prophylaxis and elimination of pedagogical and social neglect;
- intensifying of a role of family in socialization of school students, alignment of interests of parents and teachers on formation of harmoniously developed person;
- coordination of activity of all participants of pedagogic and educational process.

Analysis of the current situation.

Based on the results of 2015, the rise in crime among minors for 28,2 % was noted, in particular, 100 crimes were committed against 78 in 2014.

In 2015 minors have made 8 suicides and 23 attempts.

Minors have committed generally crimes of mercenary and mercenary-violent orientation, and their specific weight was 91 % (22), including theft – 10, fraud – 2, robbery – 2.

102 crimes (uneven-age category) were conducted in 2015 in educational institutions.

29 crimes were committed in educational institutions within 5 months in 2016, including 24 crimes at schools, 1 in higher education institutions, 3 in colleges (*lyceums*), and 1 in the organizations of additional education.

Most of all crimes are committed in educational institutions of regional center (over 70 %).

The greatest specific weight of the crimes committed in educational institutions is occupied by thefts which number made 25, or **86 %**, which is followed by petty theft, hooliganism, etc.

Objects of criminal encroachments in educational institutions are cell phones in 19 cases, money – 1, technical appliances – 3, bicycles – 1 and others.

Unfortunately, the victims at schools in a majority are minor pupils – 25, adults – 3, the school – 1.

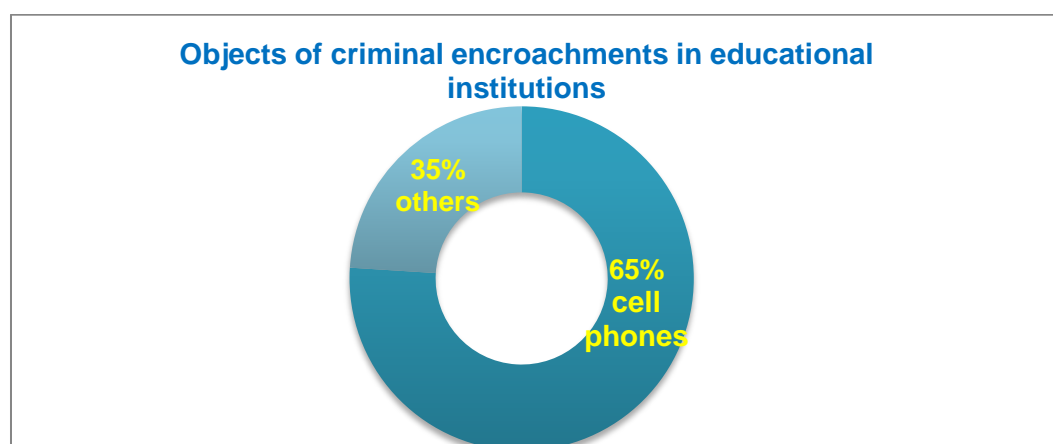


Figure 1 – The main object of criminal encroachment in educational institutions is cell phones (65 %)

In this connection, there was an understanding of the need of initiation of a question of the ban on their use in educational institutions and equipping of places for storage of mobile devices in the individual lockers (*for example, at school No. 187 of Kyzylorda the minor's phone for the sum of 250 thousand tenge (about 800 US dollars) has been stolen that is 50 times more expensive than simple phone*).

The main part of crimes and illegal acts of teenagers and also crimes concerning minors were made in the context of educational institutions of the region. At the same time, only 17 % of educational institutions of the region are equipped with video cameras, in this connection, it seemed necessary to set them in 639 educational organizations of the region.

Also the question of expediency of introduction of new criteria for evaluation of activity of principals of educational institutions taking into account the done work on prophylaxis of crimes and offenses was brought up.

For today 789 educational organizations, of which 31 are colleges, 298 regular schools and a network of the preschool organizations of 708 units function in the region, including 450 kindergartens (293 of them are private) and 258 mini-centers (9 private).

For the purpose of reducing of crime and offenses among and concerning the minors and also in order to increase efficiency of activities of law-enforcement bodies and educational organizations of the region regarding specified issues, it was necessary to provide all educational institutions of the region with installation of surveillance cameras on perimeter of the territory and inside the educational institutions.

Since there are cases of cruelty and violence over children, inadequate care and education of children, physical and psychological abuse over them, both from teachers, tutors, and also from the senior pupils over younger ones.

It is necessary to note that video surveillance promotes prophylaxis and prevention of emergency situations (the fires, technogenic catastrophes), and it is an effective remedy in prevention of acts of terrorism.

Walking into the educational organizations of persons with psychiatric disorders or the persons which are in a condition of alcoholic, drug intoxication cannot be excluded.

The video record will be help for solution of the possible conflict situation arising between children and also between children and teachers.

According to the requirements of Article 48 of the Law of the Republic of Kazakhstan "About education", performance of necessary measures for prevention of diseases, strengthening of health, physical improvement, formation of a healthy lifestyle of students, pupils is to be provided in educational organizations (The Law of the Republic of Kazakhstan "About Education" dated 27.07.2007. no. 319-III).

Responsibility for creation of healthy and safe conditions of training, education, work and rest in the educational organizations is assigned to their heads.

Taking into account that the main (65 %) subject of criminal encroachments in educational institutions are cell phones, the question of possibility of the regulatory prohibition of use of mobile devices, different gadgets in educational institutions was researched, with establishment of responsibility up to firing, with having equipped entrance rooms of educational institutions with boxes for storage of mobile phones and video surveillance.

These measures will allow reducing the crime rate, workload of pedagogical workers, law enforcement bodies; will lead to lowering of level of conflictness in educational institutions and also increasing in culture of behavior.

It should be noted that the prohibition of use of cell phones by pupils, in one form or another, exists in the USA, France, Greece, Tajikistan, Azerbaijan and some other countries. As a rule, pupils are allowed to bring phones in school, but it is prohibited to take them out of a briefcase, to talk on mobile communication and also to take photographs and carry audio and video record.

For efficiency of realization of innovations we have held meetings with all representatives of educational institutions, including parental and school committees, huge clarification work and also data processing based on objections and offers is carried out.

Involvement of citizens to this work has allowed minimizing risk of protest moods towards the innovation.

Based on results of training, the decision was made on initiation of reviewing of a question on restriction only of separate types of the mobile devices (cell phones, pads, smart watches and other similar devices) equipped with the Internet modules, photo and video cameras, except for mobile phones

with the call/answer/SMS functions, that has allowed parents to always stay in touch with children and to eradicate interest in theft of expensive phones.

Such objectives as prevention of uncontrolled access of school students to Internet by means of smart phones, lowering of thefts of cell phones, an exception of social inequality among pupils, improvement of quality of knowledge, eradication of the facts of distraction of teachers from the main work, prevention of a negative impact on moral and spiritual development of school students and an exclusion of factors of the negative impact on health were achieved due to such methods of the Project.

It should be noted that these restrictions have been accepted in the form of changes and additions in internal rules of all educational institutions of the region, which didn't contradict the current legislation of the country.

For implementation of the Project "On Counteraction to Offences in Educational Institutions", in the part of equipment with video cameras, over 900 million tenge was allocated by local administration of the region.

The changes prohibiting the use smart phones were made in internal rules of all 293 schools of the region for the first time in the country. Now 141 950 school students and 19 715 teachers will use mobile devices only with the call/answer/SMS functions (simple phones).

Thanks to the Project "On Counteraction to Offences in Educational Institutions" it was possible to reduce to zero the crimes connected to thefts of cell phones at schools of the region and to reduce number of crimes against minors for more than twice. Colleagues from other regions of Kazakhstan were interested in our experience; some already began to implement it at their regions.

The theft of phone occurred only in one school within 6 months in 2017 thanks to the project, whereas 65 percent of crimes in educational institutions were connected to cell phones during the same period of last academic year, there is also decrease in crimes committed by minors for 17.4 % (from 69 to 57), crimes against them by 4 times (from 147 to 36), crimes against sexual integrity - by twice (from 39 to 20). The facts given could already state that the project achieved its objective.

For the moment senators suggested to set aside completely smart phones in educational institutions, according to deputies, such cardinal measures will help to increase authority of the teacher in the opinion of pupils. Parliamentarians are sure that nobody has the right to record what happens in schools with smart phones cameras. Senators emphasize that children shall not complain of teachers or offend them. In this regard they suggested equating insult of the teacher to insult of the authority and to carefully control the discipline in educational institutions. The total prohibition of use of smart phones at schools by not only pupils, but also their parents and even teachers shall become the first step to it, according to deputies.

It is possible to claim that the positive experience of the Kyzylorda region was interesting for parliamentarians in implementation of the proposed restrictions at the legislative level.

If to give an assessment about concrete advantage in use of methods of project management in the work described by us, then it is possible to note the following aspects such as systematization of processes, interaction of interested parties, collecting and processing of data in one document for their use in the future regardless of changes of the project performers, the specification of

objectives and time restrictions, detailed planning of actions, possibilities of giving assessment in success of implementation of the project.

It should be noted that we could stimulate the main parties (parents, etc.) to perform their obligations on education of minors, without bringing up the question of administrative or criminal liability provided by our legislation.

Conflict of Interest and other Ethics Statements

The authors declare no conflict of interest.

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УПРАВЛІННЯ ПРОЕКТАМИ ЯК ІНСТРУМЕНТ ЗАПОБІГАННЯ. З НЕПОВНОЛІТНІМИ ПРАВОПОРУШНИКІВ

Анотація. У статті аналізуються проблеми профілактики злочинності серед неповнолітніх, взаємодії уповноважених органів, батьків та інших осіб, відповідальних за виховання дітей. Автори відзначають, що глобалізація значно посилює дію злочинності в цій сфері, а отже, потрібне впровадження нових підходів до їх запобігання, у тому числі застосування проектного менеджменту.

У статті коротко викладено досвід Республіки Казахстан щодо впровадження проектного менеджменту в державне управління, у тому числі в діяльність органів прокуратури. Таким чином, окремий приклад використання основ проектного менеджменту в попередженні підліткової злочинності, починаючи з проведення кримінологічного аналізу та прийняття рішень у виборі превентивних методів щодо викорінення цих протиправних діянь; а також з якими негативними та позитивними аспектами зіткнулися прокурори в цьому напрямку.

У статті відзначається посилення відповідальності уповноважених органів, батьків, а також їх активізація (старанність) та єдність під час реалізації проекту. Також описано успішний результат реалізації проекту «Про протидію правопорушенням у навчальних закладах», переконання місцевих органів влади у важливості справи та виділення значних коштів на оснащення всіх шкіл обласного центру відеоспостереженням.

Автори оцінюють поведінку людей під час реалізації проекту та їх зацікавленість на основі теорії «ефекту Готорна». Автори вважають, що головна роль у підвищенні злочинності серед підлітків пов'язана з неправильним вибором заходів щодо їх запобігання, відсутністю кримінологічних досліджень, а також регламентації норм взаємодії між сторонами, відповідальними за виховання дітей.

Ключові слова: злочинність, неповнолітні, проектне управління, підліткова злочинність, профілактика, кримінологія

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ELECTRONIC CRIMINAL PROCEEDINGS: INTERNATIONAL EXPERIENCE OF USING INFORMATION SYSTEMS FOR ALGORITHMIZATION OF CRIMINAL JUSTICE

Abstract. This article is aimed at studying and comparative analysis of international experience of using software and innovative technologies in the criminal justice sphere in certain countries as well as determining of the key causes of the imbalance between the development tendencies and implementation of such systems in Ukraine; ways and methods of submitting and accessing the information and evidence in electronic criminal justice system.

The significance of this article is evident from the necessity of the comparative analysis of a positive and effective experience of the acting systems of informatization of the criminal justice system of different countries in order to resolve the issue of reforming the criminal justice system of Ukraine by means of creating an information system of pre-trial investigation – electronic criminal justice system in Ukraine with the purpose of improving the modern concept of the electronic component of the criminal justice system in order to realize the fundamental principles of a democratic society such as access to justice as one of the key principles of ensuring legislative rights and freedoms of a person in a democratic state.

This research paper contains the analysis of the experience of the innovative technology functions in the electronic systems of the official bodies of the criminal justice system in the context of reviewing the application of various information programs based on the model and methods of receiving and saving information; performance analysis of the program's strategic elements; comparison of the complex approach methods to implementing innovative processes of organization, application and control in the electronic criminal proceedings in different countries.

Based on the research results, the main areas of focus have been established in order to implement the system of modern and effective electronic criminal proceedings in Ukraine.

Keywords: *electronic criminal proceedings, digitalization of the criminal justice system, algorithmization of the electronic criminal proceedings, electronic systems of the bodies of the criminal justice system*

Introduction. Dynamic development of modern strategic elements of algorithmization and implementation of artificial neural network technologies in the sphere of criminal justice in the developed countries such as the USA, Japan, China, Germany, have become viable to be implemented and applied on a large scale and envisage promising directions for the development of smart technologies.

The development of the area of digitalization of the criminal justice system in different countries can be studied through the analysis of the

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experience of functions of electronic systems which use various innovative programs such as the ones in the USA (“Oasis”, “Magic Lantem”), England (“Transforming Through Technology”), Germany (“INPOL-neu”, “rsCASE”, “Koyote”, “Fall Bearbeitungs-System THuringen”, Hungary (National Computer Board), Belgium (“e-Justice”, “Tax-on-Web”, “Police-on-Web”), etc., therefore, we can conclude that numerous countries are far more advanced in this respect. This good practice also has advanced development in the following countries: Saudi Arabia, South Korea, the Republic of Kazakhstan, Singapore, Estonia and others. In the meantime, as of now, the practice of our native application of the principle of informatization and digitalization of the criminal proceedings uncovered how imperfect and outdated it is, exposed the difficulties of law enforcement as well as the absence of a unified national concept of the electronic criminal proceedings in Ukraine.

Analysis of the latest research and publications. Dynamic development of the functions of world electronic systems of the criminal justice system bodies encourages the systematic scientific studies of this experience. The development trajectory of the digitalization processes in the criminal justice systems in different countries pertains to the plane of academic interest of many native researchers. These studies are reflected in the academic papers by Stolitnii A., Shepitko V., Branovitskiy K., Golovko L., Zhuchenko O., Mayetnii M., Chigrin G., Sirenko O., etc.

Formulation of the main material. The development of the modern electronic medium in the work of the criminal justice system in different countries can be studied on the basis of the following examples:

1) The development of the information society in *Lithuania*: In 2011, the Government approved a program (2011-2019), in which were specified certain objectives of the governmental sector to expand the scope of eligibility and use of public electronic services. In order to promote the governmental strategic goal, the National Court System (NCS) implemented a project to develop electronic services in the courts, and on July 1, 2013 the web portal of governmental electronic court services (EPP) was launched as a separate LITEKO module. Extra emphasis should be placed on the integration with the recently developed pre-trial investigation information system (IBPS). Since 2017, the pre-trial investigation procedure has been performed entirely through the information system, including all procedural actions of the courts at this stage. It is the first step in the electronic review of criminal cases, which is currently at the development stage. Meanwhile, the judiciary and procedural legislation often remain conservative and inert. Therefore, the decision-making and management system of IT systems must be built in such a way so that it is able to respond promptly to new challenges, reasonably adapt to existing norms and requirements (sometimes initiating legislative changes) and skillfully accommodate to different interests.

2) Due to the fully automated litigation and electronic means of communication – the so-called e-Justice decisions – *Estonia* has one of the most efficient judicial systems in the world. The central information system – Electronic File (e-File) – provides access to various stages of criminal, civil and administrative proceedings, court decisions and procedural acts to all parties, including citizens. The development of e-File was driven by the need to separate data storages that functioned independently of each other. Being an

integrated system, the Electronic File provides simultaneous exchange of information between information systems of different parties: police, prosecutors, courts, penitentiaries, probation organizations, executors, free legal aid system, tax authorities and customs, public support center, lawyers and citizens. Electronic File is an online information system that collects documents regarding civil, administrative, criminal proceedings and proceedings concerning misdemeanor offenses, as well as allows you to take appropriate action, insert data and process it. Electronic File enables the parties of the case and their representatives to submit documents to the court in electronic form and to control the course of the corresponding court proceedings. Citizens can also appeal lawsuits and decisions, make payments related to proceedings, as well as make inquiries in the Criminal Records Database concerning themselves and others. The system allows persons to see only the proceedings in which they participate. The public part of the Electronic File is secure because you require an ID or mobile ID to log in. Electronic File saves time and funds because data is entered only once and communication between the parties is done electronically. The Estonian e-File project has received a special award from the “European Crystal Scales of Justice Award 2014”, which is awarded for innovative practices that promote efficiency and high quality of justice.

3) Judicial Information System (JIS) in the Republic of *Moldova* is an automated information system which consists of multiple interrelated resources, information technologies and methods. The main purpose of JIS is the registration, processing and application of the information related to the court requirements and legal proceedings from the moment of their registration to the point of their archiving and publication. Users have permission to access the information and data stored in the JIS, in accordance with the competence and authority they possess and on the basis of the legal regime of the information or data to which access is granted. The level of access to information for each participant corresponds with the level of their obligations and access profile. When registering a request for an indictment, inquiry, minutes of meetings and appeals, the system ensures a logical connection between the main category and the indicator of the case file. This ensures that the data in the case file is entered correctly. This data is then displayed in all further statistical reports. The new version of the Integrated Proceedings System (IPS) allows the person to access and edit Microsoft Word documents directly in the system. This ensures the security and confidentiality of data, as well as the storage of all corresponding documents in the IPS. The current version 5.0 of the IPS has been at the stage of experimental operation since 2019 and has been gradually implemented in all courts. Improving the functionality of this version is an ongoing process.

4) In *Italy* the control over the judicial system and the development of the IT system is assigned to the Ministry of Justice; therefore, the Ministry determines key roles. The Judicial Council is responsible for the matters related to the status of judges and prosecutors, and has recently gained responsibility to organize courts and prosecutors’ offices. Lawyers – of whom there are approximately 300 000 in Italy – are organized in local bar associations (one in each local court), which are controlled by the National Bar Council. The Agency for Digital Italy (AgID) is the technical body of the Council of

Ministers responsible for coordinating e-government initiatives and in a broader meaning, the national digital innovation strategy. It sets technical standards and components for a national e-government platform.

The state of the electronic litigation in criminal proceedings is fragmented. The SICP crime information system is the digital foundation for criminal proceedings. It was developed as a unique system that works for both courts and prosecutors with full regard to the organizational characteristics of the two institutions and the rules procedural code. It consists of various modules that offer registration and data collection, document management (including statistics), document work, workflows and data interaction with external databases. SICP database The SICP database is the main element of data collection in criminal proceedings. The data structure established between prosecutors and courts ensures the seamless interaction of data between the two institutions. The long list of software modules allows users to register, update and manage data, as well as use this data to support many of the tasks performed by prosecutors and courts in criminal proceedings. NdR Portal – (Crime Report Portal). The portal should be used by police officers across the country to report crimes to the appropriate prosecutor's office. The data is automatically uploaded to the SICP prosecutors' database, while the corresponding clerks check the data.

Re.Ge.WEB is the foundation of the system that ensures document management functions (registration and data management), integrated in the workflow system, which, based on the status of the proceedings, makes various procedural actions provided by the procedural code available to users. Clerks in courts and prosecutors' offices use this module for permanent document circulation. In addition, clerks should use different, somewhat compatible programs to work with specific procedures.

A&D is "Acts and Documents" module which allows you to compile procedural documents using data collected in the database and using verification mechanisms designed to reduce errors. It is mainly used to support the performance of tasks by clerks. "Point of work with criminal proceedings" (Digital desktop of the magistrate): this module ensures a set of functions essential for prosecutors and judges to manage the workload. It offers such functions as scheduling hearings integrated into the calendar of judges and prosecutors as well as the function of automatizing the work of courts and prosecutors' offices. SNT is the notification system that allows electronic transmission of messages to lawyers and expert witnesses. Notifications require a digital signature.

5) *In Azerbaijan*, all information about every case (procedural documents of the parties, data of participants of the process, information about procedural actions and events, material and procedural documents of courts, audio recordings) is stored in the centralized information system of all courts called AZEMIS (Electronic Judicial Information System of Azerbaijan). The system was created in 2014 and since then it has been maintained and constantly developed by the Ministry of Justice as part of the Judicial Services and Intelligent Infrastructure Project (JSSIP) in collaboration with the World Bank. In 2014, the portal of the governmental electronic court services (Electronic Cabinet) was launched as a separate AZEMIS module. The electronic cabinet (special portal emehkeme.gov.az) allows the parties to form and submit

procedural documents to the court in electronic form, to read the documents of the electronic case, to manage information about court fees, court expenses and fines. AZEMIS is integrated with 30 information systems and registers of other institutions, such as Azerbaijan Automated Tax Information System, Penitentiary Service Information System, Enforcement Proceedings Information System, Register of Individuals, Register of Legal Entities, Electronic Notary Service, Traffic Police Electronic Database, Information System of Electronic Criminal Cases, the State Register of Real Estate, the information system of banks, credit institutions, mobile operators, retail markets, etc., and it continues to be integrated.

6) According to the Judiciary Act, the Judicial Information System (JIS) of *Latvia* is a governmental information system developed by the Government of Latvia (Ministry of Justice).

In Latvia, there is only one centralized JIS, which was developed in 1998 and introduced in 1999 (in courts across the country in 2003). The system is maintained and developed by the Latvian Judicial Administration and is currently being transferred onto a new platform within the E-case project (Electronic Case).

Authorization is ensured by: a password (provided by the Judicial Administration), electronic signature, electronic ID, Internet banking (through the portal *Latvija.lv*). The main advances in the JIS are currently being carried out within the framework of the E-case project launched in 2018. The Judicial Administration of Latvia is responsible for the management and administration of the project on all levels: development of an electronic case: interaction with the prosecutor's office, prisons and the probation service; development of new software for JIS (JIS 2).

After introducing the unified E-case and ensuring cooperation with the prosecutor's office, prisons and the probation service, it is planned to ensure interaction with other ISs: the registers of the Ministry of Internal Affairs, state police, forensic experts. The most important aspects of the development of the JIS are providing a fully electronic cycle within the procedure, reducing of the duration of proceedings and ensuring access to information, including fully electronic exchange of information between the court, parties and other participants in court proceedings. According to the strategic vision (concept) of the E-case solution, which is being developed involves both the development of existing IS and the implementation of new solutions. Users of the portal: parties, lawyers, experts, probation officers and clients, prisoners and their relatives. The electronic catalog of cases will be developed to ensure centralized case management, control over the access rights and data exchange between ISs integrated into the E-case (at stage 1 there will be interaction between the E-case IS of prosecutors, probation, penitentiary system, courts (JIS 2) and public E-case portal). The electronic catalog will serve as an information exchange point, but the case file will be stored in the system where it will first be registered. For instance, if the prosecutor's office registers evidence in a video format, the evidence will be stored in the IP of the prosecutor's office, but with the support of an electronic catalog of cases, judges and court employees will have access to evidence through JIS 2 and parties through the E-case portal.

7) The *Austrian* justice system, as a modern and innovative organization,

provides necessary services to the society. It generates an annual income of 1.6 billion euros and employs about 11 900 people.

The Justice Automation Program (VJ) is a foundation in Austria. It assists all courts and prosecutors' offices in keeping registers of over 66 different types of proceedings. Some types of proceedings (for example, the payment order procedure) are fully automated; court decisions are issued automatically and sent by the centralized mailing service. Documents and decisions are transmitted through the Electronic Legal Notification System (ELC), and the court fee is charged as a cashless payment.

EliAs is an electronic integrated assistance for prosecutors; The IT solution is designed to facilitate the administration of case materials during the preliminary investigation of criminal cases and, for the most part, to replace a huge amount of materials in paper form (approx 600 000 per year). Upon completion of the initial stage of proceedings against unknown offenders (UT) will be processed through EliAs (about two thirds of all cases). In order to do this, based on incoming (via ELC) reports, clearly structured EliAs files are created and transmitted to (district) prosecutors.

The goal of IVV is comprehensive automated administration of prisoners. This program, which has been in use since the beginning of 2000, includes records of prisoners in the main areas of prison administration and timing.

Electronic transmission of legal messages (ELC). Electronic transmission of legal communications with the courts was first introduced back in 1990 as a means of communication with the parties, which would be on a par with the submission of documents in print. With the introduction of this system, Austria was the first country in the world to establish electronic transmission of legal communications. Electronic transmission of legal messages provides electronic document management and automatic receipt of detailed information on the case in the IT applications of the justice system.

Since 2013, Austrian citizens who use a mobile phone application for a signature which is called a citizen's card [Bürgerkarte] can send all applications to all courts and prosecutors' offices online via a secure web portal; and foreign nationals who use the complaint identification system in accordance with the EU eIDAS Regulation have been able to do so since 2018.

As one of the most prominent e-government programs in Europe in 2001, the Electronic Communication System was awarded the EU e-Government brand.

Justiz Network. In the early 1980^s, the Austrian justice system began to create a comprehensive information network. This network (Corporate Network Austria / CNA) supports the common Austrian use of information technology by all courts, prosecutors, prisons and the Federal Ministry of Constitutional Affairs, Reforms, Deregulation and Justice through a dual node called the Federal Computing Center [Bundesrechenzentrum/BRZ], where all the main applications of the justice system function.

Due to the progress in the field of digitalization in all areas, there is an increasing need of tools for efficient analysis, evaluation and processing of data in criminal cases. Apart from this, investigative bodies increasingly need

additional support from experts in specific specializations to effectively deal with cases. The Austrian Department of Justice has responded, and in order to effectively structure and process large files, courts and prosecutors' offices can use "Normfall Manager" software (Manager of a standard case), which is designed to facilitate large data handling (reviewing, creating and identifying links, collecting information on the topic, etc.). They have also hired internal experts in the field of information technology and transferred them to the Central Office of Public Prosecutors for the Prosecution of Business Crimes and Corruption (Wirtschafts – und Korruptionsstaatsanwaltschaft).

Since 2018, the Artificial Intelligence Service has been in use and it has been "trained" to meet the specific requirements of the justice system, which can be expanded step by step into other spheres.

8) In 2017, for the first time in the history of independent *Georgia*, the judiciary officials developed and approved the Judiciary Strategy and Action Plan for 2017-2021 (Unified Court Proceedings System – UCPS). Like in many European countries, in the Georgian judicial system all information about every case (procedural documents of the parties, information about the participants in the proceedings, information about procedural actions and events, procedural court documents, audio recordings) is stored in the centralized information system of all courts which is called the Judicial System of Georgia (UCPS). All documents related to current lawsuits are submitted to the courts through the electronic case management system. In Georgia, this system is implemented throughout the country in courts of all levels (levels). This program is managed by the Department of General Courts. In Georgian courts, electronic cases are heard through an electronic case management program. Electronic proceedings in terms of the relevant court mean the electronic movement of documents (cases) from their receipt to the court to archiving or – in case of appeal – to the referral to a higher court. Hearing of a case in court begins with the submission of an application or claim through the electronic case registration system (ecourt.ge). Georgia's courts have introduced innovative service-oriented software that provides access to justice. Mechanisms for electronic transparency and proactive disclosure of information have been established, as well as a platform for electronic communication with citizens (service.court.ge). Electronic access to UCPS court decisions, in particular the software that is part of this system, has a special place in terms of ensuring access to justice. The software is directly user-oriented. The Lawyer Module was adopted in 2014, it allows the user to file a lawsuit remotely. This service is paid, and the cost is calculated according to the amount of material sent.

Prosecutorial module: involvement (integration) of various governmental institutions in the program of electronic case management will simplify the work of the judiciary, as well as the functioning of these institutions.

Before 2013, criminal judges used to work in an electronic criminal record program created by the prosecutor's office (hence, all documents were stored on prosecutors' servers), which was perceived as a threat to the independence of the judiciary. Starting from 2013, courts have operated only in their own criminal justice program and stored documents on their own server.

However, this has led to the fact that instead of electronic proceedings, the prosecutor's office is still forced to communicate with the court on paper. Integration into the program will have a positive effect on the prosecutor's office, as they will have access to generalized litigation practice, which will also improve the quality of the work of the prosecutor's office.

9) *Israel's* example in the sphere of digitalization of courts and the transition from paper to an online system of case management (hereinafter – SCM). In 2003, the Court Administration of Israel welcomed the development of a new software for managing cases in courts on the basis of electronic document management (electronic court cases). This SCM is called “NET-HA-MISHPAT” (which translates into “Justice Network”). The development and implementation of this software into the general courts system was supposed to have finished by the end of February, 2006. In reality, before September 2009, the program had been adopted in approximately 60 % of the lower and higher courts, and by the end of May, 2010, it had been adopted in all courts, except the Supreme Court, which uses different software. For limited review of cases and court decisions, access is provided via a link to the SCM through the Israeli Judiciary website: <https://www.court.gov.il/ngcs.web.site/homepage.aspx>. This website provides access to general information, such as information regarding the daily schedule of hearings in all courts; public decisions and final decisions in cases, as well as a list of cases pending in all courts (sorted by date). With the help of this site, the parties involved in a particular case may also view the following information about the case: general information about the case, dates of hearings and public decisions.

In order to perform an action in the system, lawyers need to make certain settings in the office computer system at their office (XML interface), and to access the SCM system you are required to have a card with a smart key. The card with a smart key allows you to identify the user when they're logging in and certify the electronic signing of documents. Smart card access allows you to take full advantage of all processes supported by SCM.

10) The informatization of *Swedish* criminal justice system regarding the implementation of electronic procedural processes and dedicated software products has been solved on the basis of RIF (“Rattsvasendets Informations Forsorjning”), a universal system for exchanging digital information between criminal justice authorities. As far as the legal aspect goes, RIF provides protection of personal data, electronic digital signature; software algorithms for the unification of the Swedish Criminal Code and the Swedish Criminal Procedure Code with the Swedish electronic system.

RIF provides digital exchange of “structured information” and electronic documents (regarded as “unstructured information” between the isolated electronic systems of the Swedish criminal justice system: BAS, BUS, (electronic system of the Swedish Tax System), DurTva (electronic system of the Swedish Police), Cabra (electronic the system of the Swedish Judicial Administration, which includes district courts and courts of appeal), etc.

11) The Electronic Proceedings Management System of *the Czech Republic* (ePMS) is an electronic system that digitizes physical documentation, which, in turn, allows the exchange of files in criminal cases between

employees and departments. This makes the work of all those involved in criminal investigations, the police in particular, prosecutors and judges, easier. Therefore, it is a tool for administering and managing electronic versions of criminal case files, which are then made available online to all parties involved in the pre-trial investigation, each with separate levels of access and editing rights. This system helps to improve the coordination and supervision of the pre-trial investigation, which is difficult for the police and the prosecutor's office to overestimate. Documents such as criminal investigation plans, evidence, interrogations, prosecutorial orders, approvals and reports become instantly available online. As of today, it is a huge and well-designed electronic database called "Electronic Criminal Proceedings". Thus, it was an ideal system for Ukrainian prosecutors to get acquainted with.

In the Czech system, authorized police officers can monitor all cases assigned to their units online. They are able to track the progress of all tasks set by them or prosecutors. Any changes to the files uploaded to the system must be justified and reflected.

Prosecutors can coordinate certain steps of investigations online. The system is connected to 70 different databases of the police and state administrations, which are accessed directly in the system itself, which makes the lives of investigators significantly easier. Authorized officers can see the progress of specific criminal cases online, and the system itself can analyze the effectiveness of the investigation in the case. There is also an option to "extract" statistics on criminal investigations from the system. However, the most impressive aspect of the system is that it uses "electronic data boxes" (data boxes), which are something like an e-mail service that securely transfers case files to registered users. With the help of such e-mail accounts, which work separately from ePMS, official messages, correspondence, summons and inquiries are instantly sent to registered users, regardless of where they are physically at the moment. And confirmation of their receipt is a special electronic stamp.

12) Digitalization of criminal proceedings in *Kazakhstan*: developed and implemented information system IS "TURELIK" ("Turelik" means Justice), as well as the "Unified Register of Pre-trial Investigations" (IS URPTI), which allowed to provide electronic registration of all criminal cases. The module "Electronic criminal case" was created, which allowed to automatize the stages of pre-trial investigation and prosecutorial supervision.

13) In *Russia*, the State Automated System "Access to Justice" has been created and implemented, which eliminates unjustified red tape at the stage of criminal proceedings which provides access to justice (pre-trial proceedings) and reduces government spending by eliminating inefficient costs. (2020)

14) In 2012, the "Zero Trust" system based on artificial intelligence was launched in *China*. Developed by the Chinese Academy of Sciences for "Internal Control, Evaluation or Interference in the Work and Personal Life of Civil Servants", "Zero Trust" currently operates in only 30 regions and cities – more than 1 % of China's administrative territories in a pilot project. Full-scale implementation of this system in China is expected in the near future, as there is a format of "distrust" of politicians to modern digital technologies.

The "Zero Trust" system has access to 150 secure databases, can create an analysis of the behavior of civil servants, detect suspicious transactions,

alienation or acquisition of property, illegal construction, acquisition of land or demolition of houses, illegal enrichment using schemes.

One of China's most ambitious developments in this area is the "Police Cloud" system, which is designed to gather information from shopping history, food orders, visits to hospitals where DNA samples are collected and other sources. The system is similar to data collection methods for determining the social rating of citizens and integrates data sets ranging from IP addresses, accounts, phone numbers, incoming and outgoing calls and ending with the purchase of user data from private companies, while accessing mac addresses of personal computers and information from their routers.

15) Artificial neural networks are actively used by *US* police to prevent crime. Back in 2009, private American company Palantir Technologies developed modern software codenamed "Palantir" to predict the spread of crime. The company is known for working with intelligence agencies and government agencies, and a few years ago they secretly introduced police technology in one of the *US* cities to predict criminal offenses. The secret program detected and tracked the connections of gang members. It analyzed social networks and predicted the likelihood of certain people committing a crime or becoming victims. The startup's collaboration with the New Orleans' authorities began in 2012. Palantir Technologies, whose regular customer was the Central Intelligence Agency, provided its software in the form of an unofficial charitable assistance. Most New Orleans' government officials, except for a small circle led by the mayor, were unaware of the project. The main operational functionality of this program is aimed at visualizing large amounts of information, which helps law enforcement officers to establish a cause-and-effect connection between the behavior of individuals and their offenses.

One of the tools of the HunchLab program combines crime statistics with social and economic data and other public information to determine the highest probability of an offense being committed. The practical use of this system by Chicago police has allowed the latest technology to significantly reduce crime.

Another program, "Gotham", is used by police to identify and apprehend future criminals. Information from the protocols of detentions, materials of criminal cases are uploaded to a single database, which forms a corresponding list of persons who have some connections to crime.

16) *Finland* has made significant progress in the use of e-criminal justice, using a CMS called SAKARI. This system involves many parties in a single criminal process: the police, the prosecutor's office, victims and the courts. The case management system covers the work process of prosecutors and courts, and is linked to the system used by the police. The system registers and records all criminal cases in the country and ensures a continuous flow of information between the police, the prosecutor's office and district courts.

The SAKARI system provides the opportunity to manage all documents related to a criminal case in the electronic form, as well as to edit corresponding documents. The prosecutor's office and the courts exchange documents within the system in electronic form. Since the police are connected to the system indirectly (through a "bridge" between their own internal system and the SAKARI CMS), the police and the prosecutor's office communicate via e-mail and exchange important documents, such as witness statements,

electronically. However, as in the case of the Czech Republic, all documents must still be sent simultaneously in paper form by mail.

Thus, taking into account the examples of world experience in developing, implementing and using various innovative programs and electronic systems of digitalization of criminal justice, the advantages of using electronic software products aimed at combining various government databases for their effective use in the project “electronic criminal proceedings”. The value of international experience, as an illustration of the list of effective mechanisms of electronic criminal procedure, indicates the possibility of algorithmic processes of collecting, using and storing information, which in our opinion can be taken as an example in developing our own national conceptual system of electronic criminal proceedings in Ukraine. Therefore, the way to create the concept of electronic criminal proceedings in Ukraine, as a system that digitizes physical documents in criminal proceedings – is not and cannot be the ultimate goal, but can only be a step towards creating an innovative modern domestic concept of electronic criminal proceedings with the possibility of a broad implementation of tools for algorithmization of criminal procedure interaction and electronic method of document creation and document circulation between the judicial and law enforcement systems of Ukraine.

It should also be noted that the reform processes, which are aimed, among others, at adapting domestic legislation to European standards, are typical of most areas of public administration.

Thus, the main areas of work required for the implementation of modern, full-scale electronic criminal proceedings in Ukraine are:

- radical reorientation of the modern approach of state e-government from the needs of the state apparatus to the needs of citizens;
- unification of electronic technologies in the field of e-government;
- personalization of access (access to information with limited access and other personalized services should be tied not to the state body of the information or service administrator, but to the citizen or legal entity directly affected by the information or service);
- radical reform of the digitalization process in order to increase the efficiency of the criminal justice system (the form of electronic document management must be basic, but also allow for a departure from the traditional paper form).

Consistent steps of implementation / improvement of electronic criminal proceedings in Ukraine, taking into account the listed experience of the countries are:

1. Urgent amendments to the procedural codes, which exercise the right to submit applications, evidence and other documents in electronic form, the ability to form electronic criminal cases, archives; to grant access to investigators, interrogators, detectives, prosecutors, lawyers and investigative judges to the materials of criminal proceedings, as well as other mechanisms for the implementation and use of electronic criminal proceedings.
2. Take measures to inform individuals about the procedure for obtaining electronic signatures as participants in the process.
3. Work on electronic criminal software: it must be functional, secure, effective, and at the same time accessible and understandable.

4. Transition to electronic document flow between the investigators, lawyers, the court and the prosecutor's office, the Ministry of Internal Affairs, fiscal authorities, etc. Governmental bodies should be directly interested in improving electronic criminal justice system, as this will save a lot of public money on tons of paper and supplies.

5. Provide the investigation bodies, courts and prosecutor's offices, the Ministry of Internal Affairs of Ukraine with technical means and employees responsible for performing the functions of electronic criminal proceedings.

Conclusions regarding the main areas of work on the implementation of modern and effective electronic criminal proceedings in Ukraine, taking into account the experience of developed countries, are a must:

– fundamental change of approach to the concept, method and mechanism of formation and principles of electronic criminal proceedings: from the needs of the state apparatus to the needs of joint interaction of criminal justice bodies and citizens (parties and participants in criminal proceedings);

– unification of electronic technologies during the formation of electronic criminal proceedings, taking into account international experience;

– personification of access (development, adjustment and implementation of gradation of levels and levels of access to information (including restricted access and other personalized services), taking into account the possibility of realization of procedural rights of a person: citizen or legal entity who has a direct connection to certain information);

– radical reform of the process of formation and use of electronic criminal proceedings in order to increase the efficiency of the criminal justice system and the organization of a simple and accessible procedure for access to justice in Ukraine.

Conflict of Interest and other Ethics Statements

The author declare no conflict of interest.

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Олена АНТОНЮК

**ЕЛЕКТРОННЕ КРИМІНАЛЬНЕ ПРОВАДЖЕННЯ: МІЖНАРОДНИЙ ДОСВІД
ВИКОРИСТАННЯ ІНФОРМАЦІЙНИХ СИСТЕМ АЛГОРИТМІЗАЦІЇ
КРИМІНАЛЬНОЇ ЮСТИЦІЇ**

Анотація. Ця стаття спрямована на вивчення та проведення порівняльного аналізу світового досвіду використання програмного забезпечення та інноваційних технологій у сфері кримінального судочинства в окремих країнах, а також визначення основних причин дисбалансу між тенденціями розвитку та впровадження таких систем в Україні; методи представлення та доступу до інформації та доказів в електронній системі кримінального правосуддя.

Актуальність даної статті виходить з необхідності порівняльного аналізу позитивного та ефективного досвіду діючих систем інформатизації кримінально-виконавчої системи різних країн для вирішення питання реформування кримінально-виконавчої системи України засобами створення інформаційної системи досудового розслідування – електронної системи кримінального судочинства в Україні з метою вдосконалення сучасної концепції електронної складової системи кримінального

судочинства. Це потрібно для реалізації таких основоположних принципів демократичного суспільства, як доступ до правосуддя (як один із ключових принципів законодавчого забезпечення прав) та свобод людини у демократичній державі.

Дана наукова робота містить аналіз досвіду використання інноваційних технологій в електронних системах офіційних органів системи кримінальної юстиції у контексті розгляду застосування різноманітних інформаційних програм, що ґрунтуються на моделях та способах отримання та збереження інформації; аналіз ефективності стратегічних елементів програм; порівняння методів комплексного підходу до впровадження інноваційних процесів організації, застосування та контролю в електронному кримінальному судочинстві у різних країнах.

За результатами дослідження встановлено основні напрямки для впровадження системи сучасного та ефективного електронного кримінального судочинства в Україні.

Ключові слова: електронне кримінальне судочинство, цифровізація системи кримінального судочинства, алгоритмізація електронного кримінального судочинства, електронні системи органів кримінальної юстиції.

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THEORETICAL AND METHODOLOGICAL FUNDAMENTALS IN FORMATION OF ECONOMIC SECURITY IN THE FIELD OF PUBLIC PROCUREMENT

Abstract. This article defines measures aimed at forming economic security in the field of public procurement in Ukraine. It was established that despite the large number of publications related to the study of anti-corruption in the field of public procurement, the impact of such activities on the national economy of Ukraine and the economic security of Ukraine as a whole have not been studied. It is given the classification of measures to prevent corruption in the field of public procurement, the impact of such measures on the formation of economic security in the field of public procurement in Ukraine is determined.

According to the results of the study it is established that: 1) the entrepreneur and

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representatives of customers in most cases add 20 to 40 % of “kickbacks” to the value of the procurement before the procurement procedure, which further affects their cost, which in turn directly affects not only on the financial condition of state structures and enterprises, but also on the functioning of the national economy as a whole; 2) the most promising areas of prevention of corruption in the field of public procurement, both in Ukraine and in some countries, are: improving the legal regulation of public procurement procedures; organizational and legal support of public and state control in the field of public procurement; strengthening measures of responsibility for violations related to public procurement; 3) the development of an effective mechanism for combating corruption in the field of public procurement is not only a promising area for stabilizing the economy of Ukraine, but it also will create real preconditions for its development.

The proposed measures and proposals to prevent corruption in the field of public procurement can be used during further research on this issue, as well as in the process of forming a strategy of economic security in the field of public procurement.

Keywords: public procurement, economic security, corruption, economic crimes

Introduction. One of the postulates of economics is that financial and monetary circulation is a kind of system of market economy and economic relations. Accordingly, the money supply, which provides the filling / spending of the state budget, should be recognized as a guarantee of viability and sustainable development of the country. Meanwhile, every sixth economic crime detected in Ukraine is related to encroachment on state or local budgets. Therefore, criminal encroachments on state (budget) funds are a direct threat to the economic security of the state. The sphere of public procurement is a functionally oriented element of national security, built into the mechanism of the budget sector of the economy, resource-economic and financial support of public administration (Melnichuk, 2013).

Thus, according to the Security Service of Ukraine, from 50 to 75 % of budget allocations during the public procurement procedure are spent with numerous violations. Due to corrupt agreements in the field of public procurement, losses amount is up to 10-15 % (35-52.5 billion UAH) of the expenditure part of the state budget annually.

The study of the experience of law enforcement agencies of Ukraine and the analysis of criminogenic processes in our country give reason to believe that the most common and socially dangerous illegal acts are offenses committed during public procurement. In recent years, the field of public procurement has increasingly attracted the attention of organized criminal groups and corrupt bureaucrats, who have begun to use them as a tool for rapid and unpunished criminal enrichment. It has become almost the norm for individual officials to break into the open competition with the state, actually, replacing it.

The prevention of offenses during public procurement has acquired not only economic, but also social and political national character. This situation leads to the weakening of social and legal control over the situation in the country, the connection of the executive and legislative branches with criminal structures, their penetration into the sphere of government, etc. (Vasilinchuk, & Slivenko, 2014).

The critical situation with corruption in the country as a whole and in the field of public procurement, in particular, has recently become the object of active action by state institutions, public organizations and attracts the attention of the general public and individual professionals. This situation has been formed for a long time, and the need for change in this area has been declared for a long time both at the level of individual government agencies and at the international level (Golovanenko, 2016). The current situation in the field of public procurement is further aggravated by the fact that today the prevention of crimes in the field of public procurement by is not provided by the law enforcement agencies at the proper level (Darahan, Boiko, Rohalska, Soldatenko, & Lytvynov, 2021).

Today in Ukraine there are processes aimed at restoring the Ukrainian economy. According to the World Bank's economic review for Ukraine, the Ukrainian economy has not been growing for two years. Stabilization of the macroeconomic situation should be accompanied by the implementation of structural reforms to restore economic growth.

In more detail, the reforms proposed by the World Bank for Ukraine were covered in a special note "Roadmap for urgent macroeconomic and structural reforms". According to this document, the priority measure should be macroeconomic stabilization and restoration of the normal functioning of the banking system.

Equally important are measures to improve the quality and transparency of governance, as, among other things, these measures will help increase budget efficiency, reduce losses from corruption and improve the quality of public services.

Rapid reforms will send the right signals to society and potential investors that the government is serious about fighting corruption. This will support it in implementing important reforms such as the restructuring of the gas sector, changes in the public procurement system and deregulation. These measures will reduce fiscal and quasi-fiscal deficits, increase budget revenues and help the private sector to start economic growth, as enlightened in the note.

Analysis of recent research and publications. The analysis of special and legal literature testifies to episodic and partial attempts to study the issue of combating corruption during public procurement as one of the mechanisms for ensuring economic security in the field of public procurement.

In particular, such scientists as L. Belkin, O. Bondarchuk, Yu. Ivashchuk, V. Kozak, O. Krytenko, N. Lakomska, O. Melnykov, S. Nahachevskii, A. Olefir, I. Savko, O. Taranenko, A. Cherni and others.

Some issues concerning the mechanisms of ensuring economic security in the field of public procurement have also been actively studied by foreign authors.

In particular, M. Matto and H. Athumani studied the issue of non-

compliance with the requirements of documentation in public procurement in Tanzania (Matto, Athumani, 2018). Besides, Sun T. and Sales L. J. studied the issue of predicting violations of public procurement rules through the use of neural networks (Sun, Sales, 2018).

Pi Jiancai studied the issue of favoritism in the field of public procurement (Jiancai, 2021).

Cesi B. and Lorusso M. investigated the issues of conspiracies in public procurement and the role of subcontracting in such relations (Cesi, Lorusso, 2020). Regis Signor, Peter E. D. Love and Lavagnon A. Ika studied the criminal conspiracies in the procurement of infrastructure projects (Signor, Love, Ika, 2020).

Borowiec A. studied some issues related to corruption in public procurement in Poland (Borowiec, 2019). Also, Toeba T. studied the corruption in public procurement in Lesotho (Toeba, 2018). Azarenkova G., Buriachenko A. and Zhyber T. studied the issues of anti-corruption efficiency in public procurement (Azarenkova, Buriachenko, & Zhyber, 2020).

Melnikov V. V. and Karelin I. N. studied the use of the state contractual system of the Russian Federation as a mechanism of proactive economic policy (Melnikov, & Karelin, 2021).

Samolysov P. V., Belova S. N., Tsviliy-Buklanova A. A., Gaponenko V. F. and Artemyev N. V. studied the issue of legal liability in public procurement (Samolysov, Belova, Tsviliy-Buklanova, Gaponenko, Artemyev, 2020).

Despite the large number of publications related to the study of anti-corruption issues in the field of public procurement, the impact of such activities on the national economy of Ukraine and the economic security of Ukraine as a whole has not been studied.

The purpose of the article is to identify measures aimed at forming economic security in the field of public procurement in Ukraine.

Formulation of the main material. Analysis of national legislation, publications of research and the results of law enforcement activities of law enforcement agencies of Ukraine shows that the opacity and ineffectiveness of mechanisms for monitoring the procurement process leads to the use of corruption schemes to embezzle budget funds, legalize and misappropriate them by dishonest officials to the “shadowing” of the national economy (Skalozub, 2015).

In the scientific literature, security issues of public procurement are considered mainly through the prism of economic security. The main criteria of economic security in the field of public procurement include: the ability of the public procurement market to function and ensure national interests; the ability to counteract the negative phenomena and offenses in the field of public procurement; the opportunity to “adjust” the sphere of public procurement so as to create conditions for the normal functioning of the socio-economic system of the country as a whole; the existence of an

effective system of control over the development of relations in the field of public procurement by public entities to ensure economic security (Goltsunov, 2009).

The fight against corruption in the field of public procurement is quite relevant, because the amount of lost public funds is enormous. As the Head of the Accounting Chamber of Ukraine Valentyn Symonenko stated at a press conference in 2009: “With the volume of purchases for the current year in the amount of UAH 200 billion, today, due to the lack of a competitive transparent system, we are losing about UAH 35-40 billion”. The head of the Accounting Chamber also noted that up to 20 % of all concluded public procurement agreements are elementary “kickbacks”. The situation does not change over the time. This situation, of course, negatively affects the economy of the country, generally hindering its development (Darahan, 2016).

At the same time, Ukraine is no exception, the same problems arise in other countries. For example, in the Russian Federation, losses from the total amount of public procurement at the federal, regional and municipal levels, according to experts, amount to more than 300 billion rubles a year. In Kazakhstan, the losses from corruption crimes in the field of public procurement amount to more than a billion tenge per year.

This state of affairs gives a common task for all countries of the world – to overcome corruption in public procurement. Therefore, one of the first tasks aimed at restoring and stabilizing the economy of Ukraine, which is supported by the leadership and the international community, is to overcome corruption in public procurement (Darahan, 2015).

Despite this state of affairs, the world community has not yet developed an effective mechanism for combating corruption crimes and offenses in this area.

Taking into consideration the fact of the criminogenic impact on public procurement, it is advisable to classify security threats into separate types:

- 1) direct threats (criminal acts of economic and official nature and related offenses in the field of public procurement);
- 2) indirect threats (“background” phenomena of crime, in particular destructive processes of social and economic nature, which are manifested in the budget sphere);
- 3) self-threats (victim behavior of participants in public procurement) (Melnichuk, 2013).

In the sphere of public procurement the increase of the risk of criminogenic threats from potential to real is a consequence of a number of circumstances:

- 1) powers related to the decision to purchase goods and services are usually vested in senior officials, the least burdened by public scrutiny;
- 2) criminal activity of officials working in this field often takes organized forms;
- 3) the inflow of financial resources to the state budget decreases

sharply;

4) the sphere of the shadow economy is expanding, destroying the system of competition;

5) the costs of businesses that are passed on to consumers due to higher prices and tariffs are increasing;

6) the system of functioning of the state is disrupted in terms of the implementation of very important programs for society, such as social and economic, political and military programs (Skosyrskaya, 2011).

In the scientific literature, the main economic consequences of crime in the field of public procurement include:

- growth of the shadow economy;
- destruction of market competition mechanisms;
- reduction of tax revenues to the budget;
- inefficient spending and embezzlement of budget funds;
- loss of trust of market participants to state power (Darahan, 2015).

Thus, it can be argued that offenses in the field of public procurement lead to extremely negative social and economic consequences (Skalozub, 2015).

Due to the presence of a corruption component in the field of public procurement, there is an urgent need to determine the main measures to prevent corruption in this area. In order to more effectively apply and implement them, in our opinion, such measures should be classified in certain areas, each of which performs a separate function to achieve a common goal – to prevent corruption in public procurement in Ukraine (Darahan, 2016).

As a basis for the classification of measures to prevent corruption in the field of public procurement, we took the directions of such classification, proposed by E. S. Moldovan, which she provided in order to classify measures to prevent and combat corruption in the civil service (Moldovan, 2010).

1. *Adaptive*: bringing the organization of public procurement in Ukraine in line with the recommendations and standards of the European Union member states.

Based on the analysis of the Association Agreement between Ukraine, on the one hand, and the European Union and its Member States on the other hand, it can be seen that in the case of Ukraine's association with the EU, the following changes will take place in the public procurement system:

– the parties of the agreement recognize that laws, regulations, procedures and practices relating to public procurement should not be prepared, adopted or applied to foreign or domestic goods and services, or to foreign or domestic suppliers in such a way as to protect national goods or services or national suppliers and must not discriminate among foreign goods or services or among foreign suppliers. This rule, in our opinion, may adversely affect the ability to support the national producer. One cannot disagree with the opinion of A. O. Olefir regarding the fact that such an

approach eliminates the strategic prospects for the formation of the same resources (Olefir, 2014);

– each Party shall promote the increase of imports from developing countries, within the preparation and application of laws, regulations and procedures affecting public procurement. Also it might be taken into account the particular problems of less developed countries among those countries in the lower stages of economic development. This article of the agreement, in our opinion, will have a positive impact on imports of goods from Ukraine, as Ukraine belongs to the developing countries;

– public procurement will be based on the principles of non-discrimination, equal treatment, transparency and proportionality. Today, all these principles are defined by the law “On Public Procurement”, but the main principle of procurement is not their legislative enshrinement, but direct compliance, which today is not provided in all cases;

– the Parties will strengthen cooperation by exchanging experiences and information related to their best practices and regulatory framework. These changes, in our opinion, will help bring the regulatory framework of public procurement in Ukraine to a qualitatively new level.

Based on the above, it can be concluded that the impact of globalization in the context of European integration of Ukraine, related to the reform of the public procurement system, will lead to the following positive changes:

– increasing competition;
– reducing the level of corruption;
– improving the efficiency of distribution of public resources;
– increasing the transparency of decision-making at the governmental level;

– opening of Ukrainian enterprises access to foreign state tender procurements;

– increasing the quality of purchased goods (works, services);
– cheapening of purchased goods (works, services), which will affect the savings of public funds;

– bringing regulatory and legal regulation of public procurement to a qualitatively new level.

However, in our opinion, most of these changes can negatively affect the development of the Ukrainian economy in the absence of statutory provisions for the protection of national producers (Darahan, 2016).

2. Ensuring transparency:

– ensuring the principle of openness and transparency at all stages of procurement. In our opinion, the “Standard for Openness and Transparency of Public Procurement” developed and proposed by the representatives of Transparency International Ukraine is appropriate;

– development and implementation of a system of public control over the implementation of public procurement (Article 7 of the Law of Ukraine “On Public Procurement”). In our opinion, the basis for the development of

such a mechanism could be the adoption of the Law of Ukraine “On Public (Civil) Control”, which would create not only legal but also factual preconditions for intensifying and uniting public efforts to combat corruption in public sector of procurement in Ukraine.

3. *Punitive measures*: the creation of a system of effective counteraction to corruption, in which the commission of illegal acts in the field of public procurement entails the inevitable responsibility of those responsible for their commission. Today, such liability is provided only by the Code of Ukraine on Administrative Offenses, namely Art. 164-14 “Violation of the legislation on the procurement of goods, works and services for public funds”. We agree with the opinion of M. Dovgan regarding the fact that the provisions of the Code of Ukraine on Administrative Offenses should be supplemented by Article 188 as follows: “Failure to comply with legal requirements of the authorized body in the field of public procurement to provide information” (Dovgan, 2013), as liability for such actions is not provided by Art. 164-14, which negatively affects the level of information support of anti-corruption measures in the field of public procurement.

4. *Organizational and managerial*:

- reducing the number of applications for the negotiated procurement procedure (per participant). A significant number of scientists and experts are inclined to believe that giving customers the right to independently purchase goods, works and services at public expense from one participant leads to a corruption component in this area;

- increasing the number of competitive procedures (open bidding, limited participation bidding, competitive dialogue, etc.);

- granting the right to public activists, within the framework of public control, to check the results of public procurement;

- to introduce for the controlling bodies a checklist of signs that indicate the possibility of a conspiracy between the bidder and their customer;

- training on the organization and implementation of procurement by authorized persons. At present, the law only contains a rule that indicates the possibility of such training and is not mandatory.

5. *Legal*:

- introduction of normative and legal acts, which will define in detail the practical aspects of public procurement, leaving almost no room for maneuver for customers;

- involvement of specialists from other countries in the implementation of legislative processes, in order to provide the government with proposals for transparent reform of public procurement;

- consolidation at the legislative level of the rationing of state needs (for the purchase of luxury items) (Darahan, 2014);

- introduction of a register of unscrupulous participants in public procurement (Darahan, 2014);

– supplementation of the Criminal Code of Ukraine with a norm that provides for criminal liability for violation of legislation in the field of public procurement;

– approval of the interdepartmental plan of joint actions of the Prosecutor General’s Office of Ukraine, the National Police of Ukraine, the Security Service of Ukraine, the State Audit Service of Ukraine and the Antimonopoly Committee of Ukraine for Combating Crimes and Other Offenses in Public Procurement.

6. *Preventive*: Prevention of social preconditions of corruption and elimination of the reasons for committing acts of corruption.

– introduction of a system of measures to prevent persons who have been prosecuted in accordance with the law for committing a corruption offense in the field of public procurement or convicted of a crime related to violation of the procurement procedure, or another crime committed for selfish motives, a criminal record from which is not removed or not repaid in the manner prescribed by law (Darahan, 2014).

The Law of Ukraine “On Prevention of Corruption” introduces a new preventive measure to prevent corruption, such as special verification of information about persons applying for positions related to the functions of the state or local government. However, this inspection does not apply to those responsible for organizing and conducting the auction. In addition, as practice shows, courts, when considering cases of economic crimes, do not always use such additional statutory punishment as deprivation of the right to hold certain positions or engage in certain activities. This becomes especially relevant when considering crimes committed during public procurement, because after conviction such persons can again be authorized persons or perform the functions of receiving goods (works, services). After all, the current legislation governing the implementation of public procurement does not provide for the above restrictions on such persons.

In order to avoid such facts, in our opinion, Part 7 of Art. 11 of the Law of Ukraine “On Public Procurement” should be worded as follows:

7. The authorized person carries out his activity on the basis of the employment agreement (contract) concluded with the customer or the administrative decision of the customer and the relevant provision. The authorized person must have a higher education, usually legal or economic education. In case of determination of several authorized persons, the division of their powers and responsibilities is determined by the decision of the customer.

The following may not be appointed or appointed by authorized persons:

officials and representatives of the participants, members of their families, as well as people’s deputies of Ukraine, deputies of the Verkhovna Rada of the Autonomous Republic of Crimea and deputies of the city, district in the city, district, regional council;

a person who has been prosecuted under the law for committing a

corruption offense in the field of public procurement or convicted of a crime related to violation of the procurement procedure, or another crime committed for selfish motives, whose criminal record has not been removed or expunged in established by law. Verification of such persons is carried out in the manner prescribed by Article 11 of the Law of Ukraine "On Principles of Prevention and Counteraction to Corruption" (appear in italics – V. V.);

– introduction of a register of unscrupulous participants in public procurement;

– enshrining at the legislative level the need for training on the organization and implementation of procurement by authorized persons.

To this end, paragraph 4 of Part 2 of Art. 11 of the Law of Ukraine "On Public Procurement" should be worded as follows:

"8. Authorized persons *are obliged* to undergo training on the organization and implementation of public procurement, including remote online" (appear in italics – V. V.).

"7. *Social and economic:*

– ensuring fair and adequate remuneration of authorized persons;

– introduction of a system of measures to protect the labor interests of authorized persons and persons who accept the ordered goods (works, services) in case of pressure on them by management.

The proposed system of measures aimed at preventing corruption in the field of public procurement in Ukraine. It does not claim to be perfect and may change based on specific social or economic needs at certain stages of social and economic development of the state. In addition, the proposed measures and proposals to prevent corruption in the field of public procurement can be used in further research on this issue, as well as in the process of forming a strategy of economic security in the field of public procurement.

The most acceptable and effective measures aimed at stabilizing and developing the economy of Ukraine, in our opinion, are: enshrining in the Criminal Code of Ukraine a rule that provides for the liability of authorized persons for violations of public procurement legislation; development and implementation of a system of public control over the implementation of public procurement; enshrining at the legislative level a mechanism that will minimize corruption risks during the negotiated procurement procedure (procurement from one participant).

Let's consider in detail each of these measures and their possible impact on the level of corruption in public procurement.

The first measure it is proposed is to enshrine a rule in the Criminal Code of Ukraine that provides for the liability of authorized persons for violations of public procurement legislation.

Of course, the establishment of criminal liability for violations of public procurement legislation will not completely change the current situation in the field of public procurement, but such an establishment will

significantly reduce corruption in this area, which, in turn, will increase its economic security.

The second measure we propose is the development and implementation of a system of public control over the implementation of public procurement.

In the modern period of rapid development of society, an increasing role in the activities of operational units is given to information and analytical work, extraction, processing, analysis and use of operational and investigative information, the volume of which is constantly growing. Law enforcement and regulatory agencies around the world are working to streamline incoming information, automate its processing and use in combating crime. But, as practice shows, not all the extracted information can be automatically processed using information technology. The leading role in its processing is still given to people, especially when it comes to latent processes operating in the economy. However, the resources of law enforcement and regulatory agencies in the fight against crime are not limitless. Interacting closely with each other, they combine their efforts, exchange both new and already processed information, while solving their specific tasks. Today, more and more importance is paid to the issue of impersonal involvement of citizens, members of public organizations, public and anonymous provision of information about possible offenses by individuals and legal entities involved in procurement of goods, works and services, as well as initial analysis of processes in this area (Shynkevich, 2017).

The development and implementation of organizational and legal bases for public participation in the prevention of corruption in the field of public procurement is gaining special importance today. This is due to a number of factors:

- The Constitution of Ukraine guarantees the citizens of Ukraine the right to information and their participation in the management of public affairs, ensuring openness in the formation and implementation of stable, clear economic and social policies, obtaining reliable information on the activities of public authorities and local governments;

- the field of public procurement is one of the areas most affected by corruption and without public participation it is extremely difficult to combat corruption in this area;

- without the support of public organizations, the state is simply not able to ensure quality control over public procurement, as such activities involve the involvement of a large number of different types of specialists.

We support the opinion of Yu. Kovalchuk that the basis for the development of such a mechanism could be the adoption of the Law of Ukraine “On Public (Civil) Control”, which would create not only legal but also factual preconditions for intensifying and uniting public efforts to combat corruption in the field public procurement in Ukraine (Kovalchuk, 2014). Development and implementation of a well-established mechanism

for public control in the field of public procurement will allow:

- to reduce the level of corruption in the field of public procurement;
- significantly reduce the cost of public funds for the purchase of goods, works and services;
- significantly increase the number of public organizations whose activities will be aimed at exercising control in the field of public procurement, which in turn will undoubtedly affect the amount of processed information related to public procurement;
- to receive a permanent free source of information on violations related to public procurement;
- to involve public organizations in the development and implementation of plans and programs aimed at combating corruption in the field of public procurement;
- to intensify the interest of law enforcement agencies in the fight against corruption in the field of public procurement (Darahan, 2014).

The third measure we propose is to enshrine at the legislative level a mechanism that will minimize corruption risks during the negotiated procurement procedure (procurement from one participant).

In general, the analysis of Art. 40 of the Law of Ukraine “On Public Procurement” indicates that the legislator did not fully take into account the shortcomings of the previous law. In our opinion, the provisions of this norm require changes in order to prevent possible corruption risks. First of all, based on the provisions of paragraph 2. Part 2 of Art. 40, which regulates the conditions of application of the negotiated procurement procedure, it is unclear how the decision to negotiate with a particular participant (participants) in the absence of competition for technical reasons.

In order to avoid abuse of the provisions of this provision, in our opinion, this paragraph of the law should be worded as follows: “2) if the works, goods or services can be performed, supplied or provided only by a particular entity in one of the following cases:

the subject of the purchase is to create or purchase a work of art or artistic performance;

concluding a procurement contract with the winner of an architectural or artistic competition;

lack of competition for technical reasons, which must be documented by the customer. *The implementation of the negotiated procurement procedure in these cases is carried out on the basis of the relevant certificate of the Antimonopoly Committee of Ukraine or its relevant territorial branch*” (appear in italic – V.V.);

there is a need to protect intellectual property rights;

concluding a contract with a supplier of “last resort” for the supply of electricity or natural gas.

Secondly, in order to substantiate the decision to apply such a procedure, the bidder refers to the documents confirming the existence of conditions for the application of the procurement procedure. The vagueness

of the norm in this case can lead to absurd cases that have already taken place during the justification of the procurement procedure from one participant, which can also be used by attackers. First of all, this applies to procurement in case of urgent need for procurement in connection with the emergence of special economic or social circumstances that make it impossible for customers to meet deadlines for tender procedures.

In our opinion, the proposed amendments to the Law of Ukraine “On Public Procurement” will allow minimizing corruption risks during the negotiated procurement procedure (procurement from one participant).

Conclusions. To sum up, we can conclude that the implementation of the proposed system of anti-corruption measures in Ukraine aimed at creating economic security in public procurement. Besides, it will have a positive impact on stabilizing the national economy and remove this area from the list of those that undermine the national security of Ukraine.

Based on the analysis of these data, we can draw the following conclusions:

– entrepreneur and customer representatives in most cases to the value of the subject of procurement before the procurement procedure add from 20 to 40 % of “kickbacks”, which further affects their cost, which in turn directly affects not only the financial condition of government agencies and enterprises, but also on the functioning of the national economy as a whole;

– the most promising areas for preventing corruption in the field of public procurement, both in Ukraine and in some countries around the world, are: improving the legal regulation of public procurement procedures; organizational and legal support of public and state control in the field of public procurement; strengthening measures of responsibility for violations related to public procurement;

– the development of an effective mechanism for combating corruption in the field of public procurement is not only a promising area for stabilizing the economy of Ukraine, but will also create real preconditions for its development.

Conflict of Interest and other Ethics Statements

The authors declare no conflict of interest.

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**ТЕОРЕТИКО-МЕТОДОЛОГІЧНІ ЗАСАДИ ФОРМУВАННЯ
ЕКОНОМІЧНОЇ БЕЗПЕКИ У СФЕРІ ДЕРЖАВНИХ ЗАКУПІВЕЛЬ**

Анотація. У статті визначено заходи, направлені на формування економічної безпеки у сфері державних закупівель в Україні. Встановлено, що незважаючи на досить велику кількість публікацій, пов'язаних із вивченням проблем протидії корупційним проявам у сфері державних закупівель, питання впливу такої діяльності на національну економіку України та економічну безпеку України в цілому не вивчалися. Надано класифікацію заходів запобігання корупції у сфері державних закупівель, визначено вплив таких заходів на формування економічної безпеки у сфері державних закупівель в Україні.

За результатами дослідження встановлено, що: 1) підприємець і представники замовників у більшості випадків до вартості предмета закупівлі ще до проведення процедури закупівлі додають від 20 до 40 % «відкатів», що в подальшому впливає на їх собівартість, що в свою чергу, прямо впливає не тільки на фінансовий стан державних структур і підприємств, а й на функціонування національної економіки в цілому; 2) найбільш перспективними напрямками попередження корупції у сфері державних закупівель, як в Україні, так і в деяких країнах світу, є: удосконалення нормативно-правового регулювання процедур здійснення державної закупівлі;

організаційно-правове забезпечення громадського та державного контролю у сфері державних закупівель; посилення заходів відповідальності за порушення, пов'язані з проведенням державних закупівель; 3) вироблення ефективного механізму протидії корупції у сфері державних закупівель є не тільки перспективним напрямком стабілізації економіки України, а й створить реальні передумови для її розвитку.

Ключові слова: державні закупівлі, економічна безпека, корупція, економічні злочини

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METHODS OF TEACHING FOREIGN LANGUAGES AT POLICE ACADEMIES: UKRAINIAN AND INTERNATIONAL EXPERIENCE

Abstract. This article studies different peculiarities of teaching foreign languages, including English, to cadets of foreign police academies. The research was performed in form of the polling considering the aspects of the most interest for the author among police academies being members of the Association of European Police Colleges (AEPCC). In terms of the research conducted the comparative analysis of methods and approaches to teaching foreign languages in foreign police academies and universities of the Ministry of Internal Affairs of Ukraine system was performed.

Besides, the article considers development perspectives in teaching not only foreign languages, but also profile subjects in English in Ukraine in the nearest future due to the intensification of education internationalization as well as law enforcements' cooperation with their international colleagues in criminal proceedings of international character.

A separate part of the article is more detailed description of methods and

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approaches to teaching foreign languages at the Academy of Police Force in Bratislava (Slovak Republic).

The article suggests both teachers of foreign languages and of profile subjects to consider changes in teaching methods in terms of existing disciplines in the nearest future and transformation of approaches to teaching, which will become of interdisciplinary character. Considering this, teachers of profile disciplines should start introducing English language aspect in delivering specialized disciplines, study international practices in terms of their disciplines and widen international ties with the aim of exchanging professional experience. Simultaneously, foreign language teachers shall review their personal approach to delivering “Foreign Language of Professional Direction” discipline to make the content of their classes actual as well as master their theoretic knowledge in police professional activity.

Keywords: *foreign languages, police academies, methods of teaching, approaches to teaching, professional activity.*

Introduction. Nowadays, good command of foreign languages is an integral part of our life and professional activity. Internet connection and open borders for cooperation with partners from abroad make it obligatory to use a common language for efficient communication. One of the international languages is English, which is widely applied in all spheres of our activity, including trade, banking, economy, politics, entertainment, etc. Thus, the logic suggests that learning foreign languages becomes one of basic skills in any professional activity. Surely, it is the most efficient to commence learning a foreign language in the early childhood, when consciousness is open for all new incoming information, which brain normally processes with ease. Therefore, children traditionally start learning languages at school up to their graduation. However, school knowledge is not that deep and is of mostly basic and general nature, which is absolutely not enough for further professional activity. And here higher educational institutions must take the responsibility for supplying their students with that very knowledge necessary for fruitful and efficient communication with their peers from abroad.

The most widely learnt foreign language in Ukrainian higher educational institutions is English. But not all the students studying different professions consider this knowledge, or, better to say, subject in their schedule, to be significant. Unfortunately, not all the professional directions stipulate international cooperation or further perspective to leave for some foreign state. That is why many youngsters do not make substantial progress in learning English or another foreign language. It can be said that law enforcement and police activity are among those professions. Future police officers must work three years after their graduation at a police unit in Ukraine and afterwards they will barely have a chance to climb the career ladder in that way to find themselves serving abroad, they think. But it is a false logic.

Apart from such international police services as Interpol and Europol, whose officers apply to Ukrainian colleagues in particular in search of internationally wanted criminals and numerous issues, including human

trafficking, arms trafficking, drug trafficking, etc., which makes it necessary to communicate with foreign colleagues normally in English (and at the professional level), our law enforcements have two wonderful opportunities – CEPOL and international missions.

CEPOL is the European Union Agency for Law Enforcement Training. CEPOL brings together a network of training institutes for law enforcement officials in EU Member States and supports them in providing frontline training on security priorities, law enforcement cooperation and information exchange. It also works with EU bodies, international organizations, and non-EU member state countries, including Ukraine, to ensure that the most serious security threats are tackled with a collective response. CEPOL constantly strives to offer innovative and advanced training activities by integrating relevant developments in knowledge, research and technology, by creating synergies through strengthened cooperation. The organization has created a specific learning platform for police officers titled LEEd, which offers numerous webinars, short-term and long-term online educational courses, offline learning opportunities, conferences and the most precious option of professional exchanges. The platform with all its opportunities is absolutely accessible for Ukrainian police representatives, including police cadets, and requires only good command in English to be able to pass the training and obtain a relevant certificate. CEPOL professional exchanges give Ukrainian law enforcements a chance to travel abroad and study the experience and the best practices in a direction of interest from their international colleagues. The requirement is obviously the same. Thus, it is clear that police officers have a real chance to work and study at the international level.

International missions require being proficient at two foreign languages, which should not become a barrier for our professional motivated police officers to occupy a valuable position at a highly prestigious international mission.

As we see, even Ukrainian law enforcements have a number of options to join global police team.

This article studies methods of teaching foreign languages at police academies in Ukraine and foreign states with comparison of approaches in Ukraine and the Slovak Republic in particular.

Formulation of the main material.

Part I. Short Overview of Teaching Methods in Foreign Police Academies. Comparison with the Ukrainian Practice

A short survey regarding their methods of teaching foreign languages has been conducted among the AEPC member police academies, which is the basis of this article.

Association of European Police Colleges (AEPC) is a single, initial point of contact for all European police training issues, though this role has largely been taken by CEPOL. It maximizes co-operation and co-ordination

on police training between member colleges. It facilitates the sharing of best practice and research thereby making best use of resources. In particular, it is hoped to focus upon the provision of training assistance to candidate EU countries and European countries by means of joint programs, wherever appropriate. It enables greater exchange of students and staff between national establishments, including operational police officers. Overall, AEPC intends to assist the police services of member countries throughout Europe to provide the best possible policing for their communities addressing the challenge of international crime.

First of all, it was defined what foreign languages were studied at the police academies throughout the world. All academies teach English language without exception, i.e. 100 % of academies. 33 % of police academies teach Russian, 26 % teach German, 20 % teach French, 7 % teach Chinese and 7 % teach Czech as a foreign language. However, the Police Academy of the Netherlands gives only lectures about English language to police students, who study the basic police training. Bachelor and master students do not have English lessons.

In Ukraine, 7 (seven) higher educational police institutions under the Ministry of Internal Affairs of Ukraine teach only English as a foreign language, which absolutely coincides with the world tendency. However, the National Academy of the National Guard of Ukraine (NANGU) provides its cadets with the opportunity to study the second foreign language – French or German. However, this is obligatory only for those military men, who plan to serve in international missions.

Secondly, it was determined whether foreign language teachers at the police academies were civilians or police officers. 46 % of police academies recruit civilian staff, 15 % recruit police officers exclusively, 13 % recruit both civilian and police staff, and 7 % recruit mostly police officers, while having several civilian foreign language teachers.

In Ukraine, 7 (seven) higher educational police institutions under the Ministry of Internal Affairs of Ukraine recruit civilian staff to teach English, which mostly coincides with the world tendency, while in the Slovak Republic, for instance, the Academy of Police Force in Bratislava recruits only police officers to teach foreign languages, who can deliver only the portion of professional language relevant to their original specialization.

Thirdly, we were interested in the obligation for foreign language teachers to pass any international exams (IELTS, FCE, CAE, TOEFL, BEC, BULATS) to confirm the level of their language expertise and which level (B2, C1, C2) was required. According to the obtained results, neither academy obliges its foreign language teachers to pass any international exam. Bachelor or Master degree diploma in a respective foreign language and passing general state exam before graduation is enough to deliver the subject. In some cases, internal written exams may be required to check the level of proficiency at a corresponding language before employment. The

minimum level required is B2, while the maximum one is C1. However, the Turkish National Police Academy obliges its English language teachers to obtain a score of 90 at least in Foreign Language Knowledge Level Determination Exam called YDS, which is valid proficiency in Turkey. Furthermore, apart from this many instructors have at least 100 score of TOEFL IBT.

In Ukraine, 7 (seven) higher educational police institutions under the Ministry of Internal Affairs of Ukraine oblige their English language teachers to pass an international exam of their choice to confirm their level of English. And if B2 level has been an enough result previously, now C1 level is a target. However, according to the legislation of Ukraine, school English language teachers must have C1 level, while B2 level is enough for university English language teachers.

Fourthly, we tried to find out which educational materials do teachers use in their professional activity at the respective police academies. Most academies do not have self-developed textbooks. They rely on the adaptation of material from a variety of sources, including *English for Law Enforcement* (Boyle Ch., and Chersan I., Macmillan, 2009), *Career Paths – Police* (Taylor J., & Dooley J., Express Publishing, 2011), English for Specific Purposes (ESP), CEPOL Police English, police publications and websites as well as various English language text books and reference books. Various Internet resources are also widely used by the teachers. In addition to grammar, vocabulary and reading parts in available books, some exercise and additional materials are added. Apart from grammar, in order for instructors to focus on reading, writing, speaking and listening skills, supporting materials such as presentations, videos, songs, games and activities are being used. However, some police academies develop their own educational materials, for example, *English for Law Enforcement*, *Technical English for Officers*, and *English for Border Guards* written by the staff.

In Ukraine, 7 (seven) higher educational police institutions under the Ministry of Internal Affairs of Ukraine use the developed text books for internal application, but they are mainly addressed to weak cadets. In groups with higher level of English, numerous available English books for specific purposes, including by Macmillan and Express Publishing, as well as other books of general nature, while practicing grammar structures relies on *Grammarway* of different levels. Surely, additional materials are taken from the Internet sources and adapted for each particular separate group by teachers. To practice spoken English and comprehension of oral speech, cadets pass specific courses on CEPOL training platform LEEd and have an opportunity to communicate with native speakers invited in course of the educational process. Apart from that foreign lecturers practice delivering their author courses in specific subjects to Ukrainian police cadets, which requires good level of English to perceive information presented and makes them communicate with a foreign lecturer, ask questions and solve cases

practicing spoken English and overcoming language barrier.

Fifthly, we asked whether police academies had self-developed textbooks for learning foreign languages especially for their local purposes, or did they use existing publications. 100 % of the questioned higher educational institutions used existing specific and general course-books, manuals, phrase books, grammar books, textbooks, notes from the teachers, bilingual dictionaries. 46 % of the HEIs used self-developed materials, but all of them combined their own textbooks with existing publications.

For example, the Police Academy of Czech Republic uses self-developed textbooks, which time to time are modified according to their internal needs. Lithuanian Police School does not have any self-developed textbooks. The Kosovo Academy for Public Safety uses existing publications, and different books for teaching. The Academy of the Police Force in Bratislava uses materials fully developed by its teachers. The Turkish National Police Academy uses existing publications, which are widely accepted at the global standards.

Thus, it becomes clear that each police educational institution in different countries has its own approach in terms of applying educational materials for learning foreign languages. If to speak about Ukraine, all 7 (seven) higher educational police institutions under the Ministry of Internal Affairs of Ukraine use both self-developed and existing textbooks to teach cadets English language.

Sixthly, we were eager to find out, which methods for learning new lexis were applied by the teachers of the police academies. A functional approach of the Cyprus Police Academy, for instance, was adopted in teaching grammar with new lexis taught contextually through topics/themes. The Police Academy of Czech Republic offered various methods, including by reading different stories or essays. Lithuanian Police School applied such interactive applications as *Kahoot*, *Quizlet*, *Quizizz*, *Pear Deck*, *Mentimeter*, QR codes, Moodle, etc. Other methods included brainstorming, discussions, simulating professional situations, flipped classroom model, video watching activities, group work, problem-based learning, etc. Other popular methods for foreign police academies were intentional and incidental vocabulary learning, warm-up activities, using flashcards and crosswords, giving the definition of unknown words or translating them, role plays, games and puzzles, vocabulary work sheets, audio visual material, audio and written texts, inclusion of new vocabulary in written passages, listening and reading with understanding (summary, questions, filling the gaps, multiple choice, etc.), ICT methods, word clouds, the AR and the HY-DE methods. Overall, vocabulary teaching method included finding out the meaning of unknown words in the sentences and using those words in exercises. In order to practice new words, it was suggested to use materials/books comprising practice and activities enabling students to use words learnt in sentences or practice.

In Ukraine, English language teachers from all 7 (seven) higher

educational police institutions under the Ministry of Internal Affairs of Ukraine use both traditional and innovative methods of learning and drilling new words. In our opinion, learning new lexis by cadets at home (as a home task) is the least efficient method. However, most teachers still widely use this approach, which leads to zero result. Learning new lexis at the very lessons through multiple drilling games and subsequent application of those words in exercises, texts as well as audio and video materials is comparatively much more fruitful and literally makes cadets remember and quickly recall the words during their class work.

Finally, we asked about methods for learning grammar applied by teachers at the police academies. According to our research, teachers applied interactive methods, group work and independent work, roleplaying dialogues and conversations, performing police interviews, writing and analyzing police reports, Communicative Language Teaching (CLT), explanation of grammatical rules, grammar exercises, incidental grammar teaching, blended learning method, presentation of theoretical knowledge, exercises on the assimilation of grammar, reading comprehension exercises, tenses reviews and exercises, text analysis, grammatical analysis in terms of written and oral exercises, reading comprehension exercises, vocabulary tests, listening comprehension and written/narrative exercises, in some exercises cadets received random words to identify verbs, articles, nouns, adjectives, etc. and then form sentences using them, transcription from audio material, practical grammar tests in an interactive approach (cadets were provided with the theoretical background of a grammatical issue and practiced its application through a number of different exercises), controlled practice and later less-controlled practice (afterwards, cadets should be supported with scenario and activities in teaching grammar rules). One of the best methods in teaching grammar was to encourage cadets to discover grammar rules within sentences by themselves. Moreover, in every activity and exercise, cadets could give feedback each other so that they could have an opportunity to correct their mistakes by contacting each other. Finding out mistakes of theirs and understanding/explaining the meaning was also a crucial part of learning English.

In Ukraine, teachers at all 7 (seven) higher educational police institutions under the Ministry of Internal Affairs of Ukraine do not focus on English grammar that significantly. Grammar rules are mostly practiced while fulfilling standard grammatical exercises, but cadets do not normally use complicated grammar in their oral and written speech. Moreover, there is a problem of constant changing an English language teacher in one and the same group each semester due to various reasons, which leads to gaps in learning some particular information. There was a situation, when a group of cadets was learning Passive Voice exclusively within their four years of studies, since each new teacher made emphasize on that very grammatical structure.

Surely, each teacher has his/her own approach to teaching, and it takes

some time for students to get used to a particular person. And when they face constant changes of staff working with them, the logics of studies will be definitely ruined. Every teacher has his/her own demands and requirements, own approach to evaluating knowledge of students and methods of communication. When police cadets, in particular, face these challenging changes, their motivation to learn English under different conditions may easily vanish, while their desire to study well in the situation, where their efforts are poorly evaluated, may fully disappear.

Therefore, we suppose that in order to lead cadets to the best result possible their English language studies shall be accompanied with the most progressive and efficient methods of learning foreign languages, including interactive approaches to learning new lexis and grammar as well as drilling obtained knowledge by all available means. It is clear that not only cadets must be motivated to learn English, but their teacher must follow and lead them wisely for them to understand that a person standing in front of the class not a foe with high non-grounded demands, but a friend and consultant, who wants to share his/her knowledge with them and assist them on this not simple way to success and future perspectives. Thus, innovative approaches shall be applied by teachers not only towards their teaching methods they use, but also to their own minds for them to see not children who “must” in the class, but their young “clients” needing their support in learning a foreign language. The motivation is not an external forced factor, but inner feeling, which can arise only in the natural way. If the understanding of the necessity to learn English in one’s own favour is natural, neither barrier on the way to the expected result will make it impossible to resist and overcome it. And a teacher is the one who shall support his/her students and provide all possible aid to resist and overcome those barriers and obstacles.

*Part II. European Experience: Professional Foreign Language
Training*

at the Academy of the Police Force in Bratislava, Slovakia

A good command of a foreign language is a must in today’s life of police officers across the world. Communicating in a foreign language is considered as a key competence not only of police officers but of all EU citizens. Thus, the foreign language training is of particular importance. The stress on foreign language education remains one of the main priorities also for the Academy of the Police Force in Bratislava as a higher education institution focusing primarily on security and legal issues and issues of public administration and linguistics. In this respect, there is a need to streamline international communication with an emphasis on communication in the police sphere.

The Academy of the Police Force in Bratislava pays attention to the study of foreign languages in professional police settings. The focus of the content of the language education is the terminology of the area of

criminology, individual police services, legal disciplines, in particular criminal law, international and commercial law, as well as in the field of administrative and civil law, fire and civil protection, crisis management, civil security services, etc. Thus, the Department of Foreign Languages at the Academy of the Police Force in Bratislava focuses on security and legal issues and public administration issues in Bachelor's and Master's studies and also developed particular e-learning modules relevant for the police officer within the system of lifelong education of police officers. Students can choose from English, German and Russian. Foreign language training is provided in the form of seminars. Thematic plans of respective seminars reflect the current needs of police officers working for the society, and from a linguistic point of view, the need to streamline international police cooperation and thus, also communication is emphasized in both study programs – protection of persons and property and public security services. The protection of persons and property program is mainly aimed at professional terminology in the field of individual police services, legal disciplines, especially criminal law, criminology and criminology. The focus of the public security services program is laid on professional terminology, especially in the field of administrative and civil law, fire and civil protection, crisis management, etc. The following subjects reflect the structure of the seminars currently being taught at the Department of Foreign Languages of the Academy of the Police Force in Bratislava:

8.3.1 Protection of persons and property

8.3.2 Public security services

Foreign language I – Introduction to professional terminology

Foreign language I – Professional communication I

Foreign language I – Professional communication II

Foreign language I – Specialized training

Foreign language II – Basics of communication I

Foreign language II – Basics of communication II

Foreign language (within the Erasmus + program)

In addition to the above-mentioned educational activities, the Department of Foreign Languages of the Academy of the Police Force in Bratislava (hereinafter referred to as 'the Department') actively cooperates with various offices, departments and other departments of the Ministry of Interior of the Slovak Republic, provides testing and evaluation of language competencies of members of the Police Force (for example for applicants for inclusion in the database of the Foreign Police Unit), regularly organizes and develops following courses:

1. English for candidates for posts in international police peacekeeping missions and civilian crisis management operations;
2. English language testing for members of the National Reserve of the Slovak Republic of the European Border and Coast Guard Agency (Frontex);

3. German language for participants in MEPA main courses and seminars (Mittleeuropäische Polizei Akademie = SEPA – Central European Police Academy);

4. English, German and Russian testing for selected candidates for the post of police attaché.

The Department performs various tasks for the Ministry of Interior of the Slovak Republic, actively participates in translations and interpretations for the needs of the Academy of the Police Force in Bratislava (hereinafter referred to as “the Academy”) and the needs of several other police Departments and Bureaus and also performs language corrections of Slovak and English (occasionally also German).

However, the main aim is to improve the key communication competencies required by the university-educated police professionals. The ability to express oneself orally and in writing appropriately in particular situations, listen and read with understanding, use of the information obtained by reading, process written material and mainly communicate in a professional foreign language remains priority in the foreign language education provided at the Academy, especially in regard to the fact that frontline police officers come in direct contact with a foreign language almost on a daily basis and thus, they need to be linguistically “proficient” enough to successfully handle various types of security and safety situations. In addition, graduates of the Academy and police officers from practice also need a foreign language in their further education or exchange of knowledge, experience and best practice while working abroad (e. g. liaison officers, police officers, members of international peacekeeping missions and crisis management operations, members of Frontex joint operations, participants in MEPA training courses, etc.). That means that the staff of the Ministry of Interior of the Slovak Republic should be able to professionally communicate in a given language, not only in its spoken but also in written form.

*Orientation of foreign language training
and teaching materials used at the academy*

Language training is therefore geared towards preparing students to be able to communicate in a foreign language not only on general topics, but especially on topics from the field of their study focus, to acquire knowledge from professional foreign language literature and present their own projects. The most important educational goal in foreign language teaching is, according to requirements of communicative didactics acquisition, “communicative competence” and development of students’ personalities. Professional foreign language training is carried out at the Academy for:

a) students in full-time (cadets) and part-time form (police officers) of study within study program security protection of persons and property;

- b) students in full-time and part-time form of study within study program public security services (civilians),
- b) members of the Police Force within the lifelong learning courses.

Thus, the content and thematic orientation of professional language training for all groups is modified according to their needs. Academic teaching is thematically focused on police and legal issues, vocational language courses (for example, for candidates for posts in peacekeeping missions and crisis management operations, anti-conflict teams and etc.) are thematically focused directly on the specific issues. Language training develops general language supplemented by some linguistic phenomena characteristic within the professional style, in particular terminology, is aimed at the acquisition and development of a broad register of lexical units in the field of police law and grammar focuses on more complex professional structures of languages such as passive, participatory and infinitive constructions, correct use of secondary types of sentences and related conjunctions, word formation, etc.

An integral part of the content of this language preparation is the oral presentation of the professional issues and development of students' capability to engage in a professionally-oriented discussion. Active written communication is represented by writing a professional CV, reports, requests, warnings, notifications, statements, abstracts as part of the Academy foreign language training. The language training includes also exercises in translation. For the purposes of translation exercises, authentic texts are used to practice translation and develop the basis of professional terminology and specific structures of professional language communication that is of utmost importance for professional practice - building and consolidating professional terminology and mastering specific grammatical phenomena of professional communication. Texts with a higher level of difficulty are modified and also simplified to motivate students at lower levels of language competence. For the above-mentioned purposes, the Department of Foreign Languages of the Academy prepare their own materials (e. g. in the forms of books, student's books, e-learning modules, dictionaries, reference books, etc.). The staff of the Department of Foreign Languages actively cooperates with experts in the relevant police services while developing and consequently implementing materials and teaching aids for students. Most members of the staff at the Department are police officers themselves and in order to keep themselves updated in the relevant topics and being able to reflect the current needs of the police services, they have an opportunity to conduct short-term professional internships within the chosen police service every year.

Thus, the gained experience directly affects the course and effectiveness of foreign language teaching. From the linguistic and didactic point of view, the curriculum and didactic techniques that complement primary objective of the language training – mastery of foreign language

and fluency in intercultural communication are also influenced by the information gained throughout the personal experience and practices shared by member of the Police Force from the relevant police services. However, due to limited time available during the foreign language seminars, the preparation of materials suitable for the individual study is also a must as it also functions as a source of guidance in further study of individuals. That's why foreign language teachers at the Academy can rarely rely on a commonly available "commercial" textbooks, which are not prepared with regard to a specific cultural, educational or professional police context. Today's textbook market at teaching/learning professional language is mostly sphere-oriented on trade, information technology, law and tourism, but security and police activities still remain uncovered by satisfactory study literature for police practice and students of the Academy.

*Information and communication
technologies and e-learning modules*

Communicative competence in the command of foreign languages and the use of new technologies go hand in hand with the modern education for police officers as especially information and communication technologies have become increasingly popular and frequently implemented in the learning process. Using an e-learning tool can contribute significantly in achievement of better results in students' language training. However, it needs to be well thought out, planned and prepared while both professional issues and the level of knowledge of foreign languages of the target group are taken into account. This is a challenging task as the creation of e-learning foreign language modules requires an interdisciplinary approach. The creation and formation of e-learning materials can result in success if students find the material attractive and entertaining. In general, various types of entertaining exercises, interesting graphic design and authentic professional language increases the students' motivation and chances that the students will acquire language skills in an easier and better manner. Thus, the e-learning modules were developed at the Department for selected police services as the language modules offered a new teaching tool and helped to solve the time restriction in relation to limited number of language seminars being available during the studies at the Academy. At the same time, e-learning modules are easily accessible for any member of the Police Force even within their free time, and provide also a form of continual education. Moreover, continuous language training of police officers makes them even more professional, raises the credit of the police force and gains the trust of the public. The above-mentioned facts were the main reasons behind the Department's efforts to reflect on notes and requests from Slovak police officers working in the frontline policing and complaining about the lack of possibilities to develop their communicative competence in foreign languages. To better understand

the situation, the international scientific research project “Language Modules for Selected Police Services” was launched with the aim to design e-learning materials available on the intranet of the Ministry of Interior of the Slovak Republic. The e-learning modules focusing on the English and the German language for specific purposes accessible to all the officers were designed and a dictionary and a textbook were published. The practical outputs comprise four e-learning modules:

1. English for Traffic Police,
2. English for Public Order Police,
3. English for Air and Maritime Crews,
4. German for Traffic Police, Riot Police, Investigation.

As well as a university textbook – *Deutsch im Beruf – Polizei* and a terminological dictionary – Slovak “English and English” Slovak Dictionary for Traffic and Public Order Police¹.

The main objective of the international scientific research project was to design and pilot complex e-learning language modules for the following police services: traffic police, public order police, border and alien police and investigation. The aim of the tailor-made e-modules was to benefit to the enhancement of English or German specific language competences of police officers. The modules were based on the analysis of language training provided to police officers in the Slovak Republic, the Czech Republic and Hungary and on the requirements of participating EU member states and Frontex. The materials included in the e-learning modules are adapted to B level according to the Common European Framework of Reference for Languages (CEFR). To guarantee authenticity and preciseness, the corpus was checked and edited by an English native speaker having wide experience in policing. The structure of the modul offers four units that reflect everyday communication needs of police officers. Each unit is structured in the same way – vocabulary, model sentences, reading/listening comprehension and exercises. On average, one modul provides about 600 terms and reflects the the attributes of an effective modern language teaching aid. The results concerning the module evaluation show that the e-learning material has an important place in English for Specific Purposes teaching. Interactive technologies can help bring variety and a learner-centered material which can prompt learners’ interest and motivation to develop their language competence.

Conclusions. The emphasis on efficiency and quality of foreign language training remains one of top priorities within all educational institutions around the world. Thus, the implementation and use of foreign language teaching methods that strengthen the independence of thought, judgment, action and at the same time respect the needs, motivation,

¹ FERENČÍKOVÁ, P. 2017. E-learning module for traffic police to develop the english language. *Mokslinių straipsnių rinkinys issn 2335_2035* (online) visuomenės saugumas ir viešoji tvarka. Public security and public order 2017 (18).

characteristics and opportunities of students are of utmost importance at the Department of Languages of the Academy of the Police Force in Bratislava in Slovakia. To achieve desirable outcomes in students' learning process, the use of teaching equipment and didactic tools that enable better, faster and more comprehensive mastery of the subject curriculum is more than desirable as they serve not only for illustration purposes. The use of specific teaching methods and didactic tools also helps significantly to arouse interest in the curriculum and learning and make the teaching process more attractive for students. Usually, a wide range of exercises are used in the teaching process developing students' individual language skills and speech skills. Great attention is paid to work with written professional texts, which implies that the priority language skills include reading comprehension (developed, of course, in conjunction with speaking, listening and writing), which ensures the selection and absorption of professional information as part of further or lifelong foreign language training of police officers. However, there are still more and more aspects that need to be taught and taken into account and still a space for further development in means of new teaching methods, tools and aids.

Part III. Teaching English Language in Ukraine: Future Perspectives

EMI (English as a Medium of Instruction) is a strategic approach to learning English that is winning its positions globally. However, only philological and translation professional studies implement this policy at the higher educational institutions in Ukraine. Nevertheless, it is expected that the number of professional disciplines delivered in English as a main language of instruction will have increased significantly at Ukrainian higher educational establishments by 2024. It means that to teach just English and learn new lexis will not be enough. English language teachers will have to study the specific subject in order to be able to teach a particular subject in English and explain unclear information in Ukrainian. Moreover, the teachers delivering specific professional subjects will have to master their English language level not to stay aside during such changes in the educational process. In addition, now it is clear that the principle approach in teaching will become an interdisciplinary one very soon, thus all the pedagogical staff will find themselves in the situation, when further mastering of their knowledge will become an obligatory aspect of their academic work. On the other hand, the need for professional interpreters in the education system cannot be underestimated. This is because professional interpretation guards against incidences of misinterpretation that may lead to incorrect translations.

In course of this process we are going to face the following problems and difficulties:

1. Negative impact on the mother tongue (Brock-Utne & Holmarsdottir, 2001, Al-Sultan, 2009).

2. Overload of teachers (Othman & Moht Saad, 2009).
3. Administrative and organizational difficulties (Erling & Hilgendorf, 2006).
4. Additional financial expenditures (Block & Cameron, 2002).
5. Lack of resources and absence of a clear methodic.
6. Problems of controlling means.
7. Absence of the EMI teacher standard.
8. Establishment of language support centers to develop educational-and-methodical materials.

Thus, it becomes clear that the most substantial volume of work, including self-study, will be put on the shoulders of teachers themselves. At least, at the very beginning. Therefore, English language teachers in Ukraine shall commence the process already now.

Conclusions. Since Ukrainian law enforcements are engaged in the global working environment, they have to be in contact with their colleagues from European and other countries. Thus, the dialogue between police officers from different geographical parts of the world is performed using global languages, one of which is English. Therefore, all Ukrainian police universities supply their cadets with professional knowledge in English in an obligatory manner.

English language teaching methods at police academies of different levels both in Ukraine and abroad go in hand with each other. The existing training educational materials are widely used at the national and international levels. Besides, English language teachers develop specialized materials and guidelines for learning English language at the local level considering local needs of their cadets.

However, Ukraine is at the edge of the new era, which dictates us deeper engagement of English in the educational process not only during English language classes, but also as an aspect of teaching other disciplines. It means that more teachers will have to use English while delivering their disciplines. Nevertheless, we are lucky to have the experience of our foreign colleagues at hand. In particular, the research conducted among the police academies from different countries shows that teachers in Ukraine work according to the global trends in terms of teaching and practicing English. But still we are to learn ourselves how to benefit from online tools for studying foreign languages.

Conflict of Interest and other Ethics Statements

The authors declare no conflict of interest.

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Юлія ГАЛЕНКО, Елена КУПФЕРШМІДТОВА

МЕТОДИКА НАВЧАННЯ ІНОЗЕМНИХ МОВ У ВНЗ ПОЛІЦІЇ: УКРАЇНСЬКИЙ ТА МІЖНАРОДНИЙ ДОСВІД

Анотація. У цій статті досліджуються різні особливості викладання іноземних мов, зокрема англійської, для курсантів закордонних поліцейських академій. Дослідження проводилось у формі опитування з урахуванням аспектів, які найбільше цікавлять автора серед поліцейських академій, які є членами Асоціації європейських поліцейських коледжів (АЄПК). У рамках проведеного дослідження проведено порівняльний аналіз методів і підходів до викладання іноземних мов у закордонних поліцейських академіях та університетах системи МВС України.

Крім того, у статті розглядаються перспективи розвитку викладання не лише іноземних мов, а й профільних предметів англійською мовою в Україні в найближчій перспективі у зв'язку з посиленням інтернаціоналізації освіти, а також співпраці правоохоронних органів із міжнародними колегами у кримінальних провадженнях міжнародного характеру.

Окрема частина статті – детальний опис методів та підходів до навчання іноземних мов в Академії поліції у Братиславі (Словаччина).

Стаття пропонує як викладачам іноземних мов, так і профільних предметів найближчим часом розглянути зміни в методиці викладання в розрізі існуючих дисциплін та трансформацію підходів до навчання, що набуде міждисциплінарного характеру. Враховуючи це, викладачі профільних дисциплін мають почати впроваджувати англійський аспект у викладанні профільних дисциплін, вивчати міжнародні практики в розрізі своїх дисциплін та розширювати міжнародні зв'язки з метою обміну професійним досвідом. Одночасно вчителі іноземної мови переглядають свій особистий підхід до викладання дисципліни «Іноземна мова професійного спрямування», щоб актуалізувати зміст занять, а також оволодіти теоретичними знаннями з професійної діяльності поліції.

Ключові слова: іноземні мови, поліцейські академії, методика навчання, підходи до навчання, професійна діяльність

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THE SPECIFICS OF POLICE INTERROGATION (EXAMINATION) OF CHILDREN IN THE SLOVAK REPUBLIC

Abstract. In the paper, the authors analyse the situation in the Slovak Republic concerning child interrogation or examination independence on the fact, whether a child is a criminal offender or a victim. They focus on legal regulation of this issue in the legal system of the Slovak Republic, and on specifics of this procedure from the tactical and psychological point of view.

The interrogation (or the examination) of the child is a very specific criminalistics method that is used in criminal proceedings. The particularities of this procedure are determined by the age, mental and emotional degree of child's development, social status, suggestibility (ability to influence). These circumstances should be respected under every conduction of the interrogation (examination) of the child by the prosecutor, the investigator of the Police Force, or the authorized officer of the Police Force. The main aspects of this procedure are:

- To use psychologists or other experts before and during conduction of the procedure;
- Not to repeat the procedure in further criminal proceedings;
- To use special devices for recording or transmission of the sounds and voices;
- The instruction before interrogation (examination) should be adapted to the child (understandable, respectful, etc.);

The procedure should be conducted in a good atmosphere and good conditions (psychological approaches; special interrogation rooms), etc.

Keywords: *a child, children, youth, interrogation, examination, criminal*

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proceedings, a body involved in criminal proceedings, a court, an accused, a victim, a witness, testimony, special interrogation rooms

Introduction. *“No matter their story or circumstance, all children have the right to be protected from violence, exploitation, and abuse. Child protection systems help children access vital social services and fair justice systems – starting at birth. They reach out to the most vulnerable children, including those with disabilities; girls and boys who have been placed in alternative care; children uprooted by conflict, poverty, and disaster; or those who may become victims of child labour or trafficking, or recruited into armed groups. Child protection systems prioritize children’s physical, mental, and psychosocial needs to safeguard their lives and futures”.* (Unicef, 2020)

In the Slovak Republic, according to the Act No 300/2005 Coll. Criminal Code (under Section 127) *“a child”* is defined as person under eighteen years of age unless he has reached the legal age earlier (e.g. marriage status). On the other hand, the person who has not reached the age of fourteen at the time of the commission of the criminal offense is not to be held criminally liable. The only exception is sexual abuse. The legal age limit for criminal liability for this crime is the age of fifteen at the time of its commission (under Section 201 of this Act). When speaking about the position of a child in criminal proceedings, there are two possibilities, a child as a victim (an injured or aggrieved person) or a child as a criminal offender. However, a perpetrator under the age of fourteen is not criminally liable, because it is *“a circumstance excluding criminal liability”* as well as insanity. Apart from that, there are certain circumstances excluding unlawfulness of an act, e.g. extreme necessity, necessary self-defence, authorized use of a weapon, permissible risk, exercising rights and performing duties, consent of the injured party, and acting as an agent.

1 The police interrogation (examination) of children

1.1 Analysis of legal regulation in the Slovak Republic

Under Section 121 of the Act No 301/2005 Coll. Code of Criminal Procedure, interrogation of the accused is conducted only by a body involved in criminal proceedings (police and prosecutor) or by a court. The main aim is to obtain a complete and clear picture of facts relevant for criminal proceedings (to the extent possible). During interrogation the human integrity of the accused shall be respected which means that he shall not be coerced in any way to make the statement or some kind of confession. Prior to the interrogation, the investigator, the prosecutor, or the judge should advise the accused.

Actually, the accused should know that he:

- Has the right to make a statement or to remain silent;
- Must not be coerced in any way to confess;
- Has the right to elect his defence counsel (if he cannot afford to pay the defence costs, will have the right to a free counsel);

– Has the right to ask to be interrogated in the presence of your counsel, otherwise may remain silent.

Apart from that, the accused should have an opportunity to make a detailed comment on the charges and, in particular, to provide a coherent description of the facts that he is charged with, to present the circumstances, which attenuate or reverse the charges, and to submit evidence supporting his statement. (Section 122 par. 2 of the Act No 301/2005 Coll. Code of Criminal Procedure)

The task of the interrogation is to ask questions aimed at supplementing statement or eliminating incompleteness, ambiguities and contradictions of the accused.

The statement of the accused ought to be taken down on the record, as a rule, dictated by the interrogator using direct speech and verbatim as far as possible.

If the person interrogated as the accused is under 18 years of age, the body involved in criminal proceedings uses technical devices for the transmission of sound or images. The technical means should be used if the requirements prescribed by law are met. It is appropriate to examine the circumstances of the case, mainly if there are reasonable grounds to doubt whether this person can understand the content of interrogation. It is obvious that special care should be taken to preserve the interests of children and juveniles. The only exception is serious technical problems, but the body involved in criminal proceedings should refer to these facts in the report.

Moreover, a person under 18 years of age might be examined in the position of a witness or an aggrieved person (the injured). In the Slovak Republic, there is a formal obligation to testify (to give a witness testimony) about his knowledge of the crime and the offender, or of the circumstances relevant for criminal proceedings. It means that every person is obliged to appear when summoned by the bodies involved in criminal proceedings and to give a witness testimony. If the witness (duly summoned) fails to appear without a valid excuse, the bodies involved in criminal proceedings may bring him in. Analogically, the attendance of a witness in the court hearing is securable upon the resolution by the court. (Section 127, 128, and 129 of the Code of Criminal Procedure)

Before the examination of the witness, it is necessary to identify certain circumstances. Mainly we should establish his identity and his relation to the accused. The witness is usually advised of the importance of witness testimony but of course, he has the right to refuse the testimony. In certain cases, the examination can be ban. The witness is always advised of his duty to tell the truth and not to withhold any evidence, and of criminal consequences of perjury. Prior to the examination during the main hearing or open hearing, a witness shall be required to take an oath. (Section 131 of the Code of Criminal Procedure).

During the examination of the witness, it is inevitable to follow

certain rules:

- A witness may be examined to the necessary extent for criminal proceedings.
- He may be asked questions aimed at supplementing his statement or eliminating incompleteness, ambiguities, and contradictions.
- The questions should be formulated clearly and intelligibly.
- He may never be asked leading questions suggesting the answer, deceptive questions, and the questions containing the facts that should be ascertained from his testimony.
- The questions should not cause an unwarranted invasion of privacy of the witness, apart from ascertaining the motive of the accused, in particular when examining a sick witness or a witness injured by the crime against human dignity.

The child is considered to be “*the most vulnerable victim*” according to Act No 274/2017 Coll. on the Victims of Crimes. Anyway, the examination ought to be conducted with special care. Taking this kind of evidence repeatedly in subsequent proceedings is not allowed. Besides other things, it is recommended that the examination in pre-trial proceedings should be performed only by a person of the same sex and the attendance of the expert on child whereas juvenile psychology has an obligatory character.

Similarly, under Section 135 of the Code of the Criminal Procedure, if the witness is under 18 years of age, and the examination concerns matters whose recollection could have a negative influence on his development (mental and moral) or can cause a risk of secondary victimization or it is a crime against human dignity such a process should be conducted with utmost consideration (given the witnesses’ age, his relation to the criminal offender, his dependence on the perpetrator, the facts and the circumstances of the case, etc.). Generally, it is recommended not to repeat the examination in subsequent proceedings and to engage a psychologist or an expert in juvenile education, or a social worker (instead of a guardian) with their expertise or advice to the proper conduct of the examination. In certain cases, an education specialist and a statutory representative may be summoned, but it depends on the fact whether his presence could contribute to the proper conduct of the examination. The child should be examined repeatedly only exceptionally and if it proves to be necessary for further proceedings. For instance, in/during pre-trial proceedings the examination should be conducted only upon the prior consent given by a prosecutor. In/during judicial proceedings the evidence may be secured only by reading the record of the examination (in these cases, the court is responsible for the decision-making process). The accuracy and completeness of the record; the manner in which the examination was conducted; and the way in which such person was testified, etc. can be proved by interviewing the experts. Nevertheless, the court may rule about the current need of taking this

evidence.

Before examining a witness, the body involved in criminal proceedings can consult the way of the proper conduct of the examination with the psychologist, expert, social worker, or the statutory representative. The purpose is to prevent secondary victimization of the child witness and juvenile witness.

When this category of person is examined as a witness in respect of the criminal offense committed against a next of kin or a person entrusted into care, or when is clear according the circumstances of the case that a repeated testimony could be influenced by other subjects, or when there are reasonable grounds to believe that the examination could affect his mental and moral development the examination should be conducted with technical devices for the transmission of sound and images. As was emphasized above, the repeated examination of a child in further proceedings (including court hearing) is required on an exceptional basis only. In these cases, it is necessary to secure the prior consent given by his statutory representative or by his legal guardian. If the body involved in criminal proceedings does not know the real age of a victim and if there is a possibility to assume that he is under 18 years of age until the complete opposite is not be proved, the examined is considered to be a child.

It is clear from the presented information that the position of the child and juvenile in criminal proceedings is very delicate because of their age, physical, mental, social, emotional, language level of their development. (Hullová, 2015)

1.2 Psychological and tactical aspects of the police interrogation (examination) of children

Victimology is a branch of criminology that scientifically focuses on the character of a victim (among other things). In criminology and criminal law, a victim of a crime is a person who was harmed by the perpetrator.

Childhood is the time between 0 and 14 years of age. It is the most important period of human age when a human being goes through remarkable changes. Cognitive abilities, human personality, including sociability and character are created have a significant impact on legal awareness. (Heretik, 2010)

Every crime committed against a human being may have negative consequences and is generally considered that violence between two people is the most traumatic. The way to go through or cope with a traumatic situation is individually determined by many internal or external environmental factors.

Typical psychical and physical reactions of the victims are (Matoušková, 2013):

– Psychical problems – loss of self-confidence, self-blame, fear, anxiety, feeling of unreality,

– Psychological changes (several hours, days after a crime, long-term, permanent) –memory decline, mental skills, deterioration of thinking, the distraction of attention, moodiness, increased need to take care or to be thoughtful of somebody,

– Physical reactions – faintness, heart problems, stomach problems, headache, tearfulness, stupefaction, etc.

A term “*Extremely traumatized person*” is used for the victim, the witness, or bereaved person who has a strong psychological reaction after an incident where human health or life was endangered. It is not the role of a police officer to recognize the degree of traumatization of the person. It is important to realize that everyone can react to a traumatic situation differently. It is a natural reaction to unexpected or atypical situations that can cause urgent or long-term, negative psychological, physical, and social consequences. The natural recovery of an organism can take approximately four and six weeks. After this period, the life of an individual tends to normalize. However, if the problems persist, is recommended to contact an expert in the medical area. The traumatized person needs to have feelings to be safe, respected, and time.

Child interrogation (examination) is a very difficult process because everyone is unique and different. The most important idea in crime investigation is to respect the particularities of the examined and his current period of human life (degree of development). Especially young children have their own vocabulary, which the investigator (a police officer) needs to discover. During communication, he needs to show respect and correctly use their vocabulary comparing with the terminology (e.g. a term for sexual parts of the body).

In the Slovak Republic, in selected regions, the special interrogation rooms are established. They are able to fulfil the requirements (standards) of other developed countries. Nowadays, special training for the investigators is being performed at the Academy of the Police Force in Bratislava. Moreover, special methodics have been prepared for the police practitioners (“*Methodics for work with the victims of crimes in the special interrogation rooms*”).

The interrogation (examination) of the child should lead to securing as much as possible relevant information while simultaneously preventing the traumatization of the child. It is necessary to take into consideration the short attention span of the examined (interviewed) child, thus an appropriate support should be provided by the investigator (not giving the orders such as: “*Pay attention!*”).

– Certain factors which can have influence on effectiveness of the interrogation (examination):

– Who accompanied the child? – quality of the relationship between them, trustworthiness, proximity, etc.

- When will the interrogation be conducted? (In the morning, at lunchtime, in the evening) – has a direct impact on the attention span of the interviewed,
- Furnishings and other equipment of the interrogation room – practically and aesthetically equipped,
- Beware of the number of toys – plenty of toys can distract the attention of the child,
- Other things on the desk – it is good to have a glass of water, handkerchief (but no sweets on the desk),
- Duration of the interrogation (examination) – should be adapted to the physiological needs of the child (e.g. to remind them to go to the toilet),
- Number of people in the interrogation room – reduce it,
- The presence of the parents during questioning – take into consideration whether it is necessary,
- Position of the interviewed and the investigator in the interrogation room – the child should be placed where there are good conditions for video recording and the investigator should be in such a place where all needed things are accessible (e.g. demonstrative dolls, drawing stuff).
- All materials (files, records, papers, etc.) – should be cleaned after reading,
- Notes should be written by hand, not by computer – eye contact should be maintained,
- Stress – minimization or ideally complete elimination,
- Making contact with the child – prerequisite for successful interrogation.

The way to make contact with the child depends on the age (contact with a teenager is absolutely different from contact with five years old child).

With no concern for the age of the child, the interrogated person should be advised of the fundament of each procedure in criminal proceedings (e.g. “Where will the particular procedure be performed? What kind of procedure will be performed? By whom will the procedure be performed? Who is the accused? What are the rights of the interviewed? In general, is recommended to have a calming oral expression, to maintain appropriate eye contact, to use as much as possible opened and non-conflicted questions, active listening, and understanding the content of the testimony.

The investigator should be the one leading the interview (interrogation, examination). It is necessary to follow the basic principles of politeness, which can help to create trustworthiness and credibility of the police officer and vice versa distrust.

Using the polite form of addressing is generally required. Such the interviewed should not be with (concerning the personality of the child;

inadequate familiarity can cause and escalate disrespectful reactions, especially from the point of view of the teenagers, the usage of diminutives in oral speech is not desirable).

The investigator should be aware of the character of his behaviour because it can have an impact on the child (verbally and nonverbally). Proper contact with the child can be made by the good manner of gesticulation, the correct posture of the body, maintaining of eye contact, frequency of breathing, tempo, intonation, and melody of the voice or speech, and simultaneously to control the child reactions and emotional behaviour during interrogation (examination). If the verbal expression is in contradiction to nonverbal expression there is a possible escalation of stress, anxiety, or distrust towards the investigator.

During the phase of making contact with the child, is suitable to use introductory questions such as *“Do you know, why you are here?”* or the statement like that *“It is something that happens to other children like you.”* Subsequently, the investigator should watch (observe) the signals of the child and positive evaluation to start with the main part of the interrogation. The child should be advised in an appropriate manner. The child must have a feeling of control over the situation and it is convenient to explain to the child what is/ will be going on. In certain cases (e.g. very serious cases of sexual abuse), is possibility to make an agreement which can help the child understand. Actually, this agreement is about *“good and bad questions”*. The child can decide to answer good ones and to refuse to reply to bad ones. The most frequent problems (mistakes) during interrogation are inadequate vocabulary and difficult terminology. Thus, is required to maintain legibility of the instruction before interrogation (respect age, mental state, and mental degree of development, etc.).

At the beginning of the interrogation, common questions are recommended because they can have a calming or reassuring character. For instance, *“Do you go to school?” “Do you know how to write? Could you sign here?”* These types of questions can help us deduce what is the mental state, abilities, or orientation in space and the time, in the family relationships and relationships among the persons of the same age, etc.

The interrogator should summarize continuously what was provided in a statement (or given in a witness testimony). In parallel, it is necessary to focus on psychical and emotional reactions of the asked (suspect or witness), e.g. psychomotor agitation, restlessness, nervousness, fluctuation of attention, neurotic symptoms (bite the nails, tics, etc.) – when and in which intensity did they occur or manifest.

On the other hand, the child does not have to accept physical contact (touching, stroking, encouraging, etc.) naturally. It is possible to ask him for permission to do that because sometimes can be difficult to predict his reaction to physical contact. In general, is known that communication

should be adapted to the speech and vocabulary of the child. Moreover, can be counterproductive to expect that the child will act (behave) according to the cognitive scheme of the adults. Therefore, is not appropriate to insist on accurate data, such as time, number, months, distance, etc. The child can know hours, days, months, etc. but he cannot use it. Analogically, the children can have problems with understanding the meaning of terms “before” and “after”. That is why it is better to use questions such as “What did happen in the beginning?” “How did it start?”

The child has a higher tendency to accept uncritically, automatically, and spontaneously the opinions of others and has a higher tendency of adaptation on his behaviour and emotion of others. The suggestibility of the child decreases with rising age, although children tend to be more influence able than adults are. Children try to estimate fulfil the expectations of the investigator, they want to please him with the answers. The child proceeds to state what the investigator wishes to hear. Therefore, the investigator should formulate his questions attentively, so there is no room for suggestions. The leader of the investigation should continuously verify, whether spontaneous suggestive influence may have unintentionally affected him. It means that he uses unequivocally verbal or nonverbal signals to the child that he can interpret.

The child victims must cope with their trauma, otherwise, they are liable to develop posttraumatic stress disorder (PTSD). According to Slovak national law, the confrontation between the child victim and the perpetrator is strictly prohibited and from the psychological point of view, the confrontation with the perpetrator due to the over-defensive reactions of the mind which can cause insomnia, enuresis, attention span malfunction, self-destructive tendencies, etc. Subsequent contact with the criminal offender (even indirect – video recording, photo documentation of the crime scene, etc.) may lead to further (secondary) traumatization.

From this point of view, the requirements for separation of the victim and the criminal offender in criminal proceedings conducted by the courts and investigation bodies are legitimate. (Voňková, & Spoustová, 2016).

Conclusions. Youth-related crime and crime committed on youth is a very serious problem, which all the countries over the world are encountering. In 2019, in the Slovak Republic 58 829 of crimes were committed and 40 339 of persons were accused, whilst 3 208 (almost 8 % of them) were children and youth. On the other hand, the Police Force in the same year identified 9 266 of the victims, where 1 182 were children and youth (almost 13 % of them). From this statistic data is clear that there is a social need (requirement) to deal with the issue and try to solve it (eliminate or minimalize) in near future.

The interrogation (examination) of the child during criminal

proceedings is a very difficult criminalistics method. In the Slovak Republic, this procedure should be conducted by the court and by the body involved in criminal proceedings, i.e. (the investigator of the Police Force, the authorized officer of the Police Force or by the prosecutor). The main problem is that the child is a vulnerable victim due to his age, mental and moral development is at risk of secondary victimization, and therefore work with this category of victims requires special abilities and knowledge in child and juvenile psychology. On that account, professional help (engagement) the psychologist before and during interrogation is inevitable. He shall contribute to the proper conduct of the examination. Apart from that, the examination should be conducted by using technical devices for the transmission of sound and voice in order to not have to repeat this procedure.

As mentioned above, nowadays in the Slovak Republic, the special interrogation rooms are implemented into police practice. The purpose is to eliminate the stress and repeated traumatization of the vulnerable victim during interrogation. The Academy of the Police Force in Bratislava participates in the training process and from our feedback from the investigators who were taking part in the course, is clear that this step is very important for the quality of the investigation where are children involved.

Conflict of Interest and other Ethics Statements

The authors declare no conflict of interest.

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Моніка ХУЛЛОВА, Андреа ПАСТУХОВА НЕЙМАННОВА

**ОСОБЛИВОСТІ ДОПИТУ (ЕКСПЕРТИЗИ) ПОЛІЦІЄЮ
ДІТЕЙ У СЛОВАЦЬКІЙ РЕСПУБЛІЦІ**

Анотація. У роботі автори аналізують ситуацію в Словачській Республіці щодо незалежності допиту чи експертизи дитини від того, чи є дитина злочинцем чи потерпілим. Вони зосереджені на правовому регулюванні цього питання в правовій системі Словачької Республіки, а також на особливостях цієї процедури з тактичної та психологічної точки зору.

Допит (або огляд) дитини є досить специфічним криміналістичним методом, який використовується в кримінальному процесі. Особливості цієї процедури визначаються віком, психоемоційним ступенем розвитку дитини, соціальним статусом, сугестивністю (здатністю впливати). Ці обставини повинні враховуватися під час кожного проведення допиту (опиту) дитини прокурором, слідчим міліції або уповноваженим працівником міліції. Основними аспектами цієї процедури є:

- залучати психологів або інших експертів до та під час проведення процедури;
- не повторювати процедуру в подальшому кримінальному провадженні;
- використовувати спеціальні пристрої для запису або передачі звуків і голосів;
- Інструкція перед допитом (опитом) повинна бути адаптована до дитини (зрозуміла, поважна тощо);

Процедура повинна проходити в хорошій атмосфері та хороших умовах (психологічні підходи; спеціальні кімнати для допитів) тощо.

Ключові слова: дитина, діти, молодь, допит, експертиза, кримінальне провадження, орган кримінального провадження, суд, обвинувачений, потерпілий, свідок, показання, спеціальні кімнати для допитів

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ORGANIZATION AND PLANNING OF THE PROCESS OF INVESTIGATION OF ROAD ACCIDENTS IN THE REPUBLIC OF MOLDOVA

Abstract. The objectives of this study are determined by the social relations that appear in connection with the performance by specialized bodies in the investigation of road accidents. Thus, the general object of the research is the national and international doctrine in the criminal-procedure and forensic aspect of road accident investigation and especially the organization and planning of these processes.

Keywords: *investigation, road accident, responsibility, social relations, organization, planning, vehicle*

Introduction. Considered as the main tactical tool in the detection and investigation of crimes, the organization of criminal prosecution serves to achieve the goal of the criminal process: the protection of the individual, society, and the state from a criminal offense that should be punished according to his guilt and no innocent person can be held criminally liable. - by determining the directions and scope of the investigation necessary to clarify all the facts incriminated by law.

Main part. According to Larin A., “the organization of an investigation means rational selection, preparation of the means available to the criminal prosecution officer, creation and use of optimal conditions for ensuring and achieving the trial’s goals”.

Ishchenko E. (2006, p. 127) emphasizes that the planning of a criminal investigation is a process consisting of several stages, which include obtaining primary data; setting the objectives of the investigation by involving investigative actions and special investigative measures; clarification of the timing and sequence of planned activities; drawing up a research plan.

To achieve these goals, the criminal prosecution officer, the prosecutor must be a good manager. Pop Sh. (2011, p. 43) again notes that the interaction

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between people gives rise to the entry into the action of intersubjective relations (communication, intercognition, social-affective or subordinate relations, dependence, etc.), which, when organized and hierarchized, give rise to a multitude of informal structures; in addition, the interaction between people leads to the emergence of collective mental structures (relationships, opinions, beliefs, mentalities, prejudices, etc.), positively or negatively affecting not only group life, but also the productivity of group or organizational work.

According to the provisions of the Code of Criminal Procedure of the Republic of Moldova, criminal prosecution has limited content and strict implementation. According to the legislative provisions, a criminal investigation is an obligatory stage in most criminal cases when the criminal process is presented in a typical form (Osoianu T., Andronache A., & Orîndaş V., 2005, p. 7).

Referring to the opinions expressed in the literature, we see that from a forensic point of view, the organization of a criminal investigation includes:

1. Coordination of the work of anti-crime agencies, the creation of groups of criminal prosecution officers, operational workers, and specialists in various fields of science, technology and art.

2. Creation of conditions for work, equipping the premises with the necessary equipment for performing official duties.

3. Ensuring contact with specialists and experts involved in research activities to apply their knowledge in the investigation of a criminal case.

4. Creation of the necessary conditions for a collective investigation, the formation of groups, provided for by law and often used in practice, but causing several organizational issues related to determining the scope of activities of the members of these groups, organizing dialogue and cooperation (Karneeva, L., & Galkin, I., 1965, p. 18).

According to Berkeshan V., the planning of a criminal investigation and its organization aims to carry out high-quality activities and correlate all the measures and actions taken to verify the circumstances that preceded, accompanied, and followed the crime under investigation (2002, p. 89).

Stancu E. noted that the organization and planning of a criminal investigation are important. The main argument supporting this thesis can be derived from analyzing the content of criminal prosecution planning, which is a process of transition from practical thinking to concrete actions of the prosecution from beginning to end (2010, p. 398).

From the previous, we conclude that the planning of criminal prosecution is a complex thought process, the essence of which is to determine the direction of criminal prosecution, tasks, methods, and ways to solve them following the requirements of the current legislation.

Thus, the planning of a criminal investigation is also a creative activity, as can be seen, and accommodates balanced experience, the ability to

systematize the available information, as well as the persistent application of various knowledge, including forensic, from the person conducting the criminal prosecution.

The purpose of planning is not only to organize the activities that will be carried out in the framework of criminal prosecution but also to provide a scientific basis for a criminal prosecution, orienting the activity towards the established goal. Thus, planning is not a research method since it does not serve as a means of establishing the truth. At the same time, the planning of a criminal investigation is only a way of organizing a criminal investigation.

According to the scientist Samoshina Z. G., the following tasks can be distinguished in the process of research: general (related directly to those set out in the criminal procedure law); specific (which are the object of the test); specific (due to the peculiarities and originality of the stages of the investigation of a crime); individual (associated with the commission of criminal prosecution) (Ed. Yablokova N., 2001, p. 53).

In our opinion, if we talk about the tasks of the forensic methodology for investigating different categories of crimes, they can be divided into general and special.

General tasks are usually clearly defined and remain unchanged during the investigation, while special tasks can be specified and modified depending on the nature of the act and other circumstances.

Among the general tasks of forensic methodology are:

- ensuring the systemic activity in the fight against road accidents;
- assistance to law enforcement agencies in order to establish the truth in criminal cases;

Special tasks include:

- a careful study from a forensic point of view of the phenomenon of a traffic accident;
- study and generalization of the positive practice of investigating criminal cases in order to prevent traffic accidents;
- highlighting some legal norms for organizing and conducting an investigation of road accidents;
- development of scientific, methodological recommendations for the organization, research, and prevention of road accidents.

Indeed, planning accurately represents the intended end, anticipating the most appropriate means to achieve the intended end. In the absence of careful planning, the activities of the criminal prosecution officer are deprived of perspective and guidance (Ciopraga A., & Iacobuță I., 2001, p. 210).

At the same time, planning avoids wasting time, resources, and money on establishing external circumstances in relation to the case and ultimately ensures the efficiency and speed that should characterize a criminal investigation. By providing an overview of all aspects and actions that must be performed in a given case, planning creates the preconditions that give the

criminal investigation a complete and multilateral character (Ciopraga A., 1996, p. 13).

The importance of planning a criminal investigation is to ensure (Bercheșan V., 2002, p. 89):

- strict observance of both the provisions and the rules established by the forensic methodology;
- high-quality research and its correct focus;
- full clarification of all the circumstances of the commission of crimes, including by extending the investigation;
- giving organization to all activities, which will entail an increase in the initiative of the criminal prosecution authorities;
- the use of all methods, procedures, and scientific and technical means for the use of traces found both during the production of investigative actions on the spot and during other operational-search activities;
- observance of the rights granted by law to all persons participating in criminal proceedings;
- implementation of the principle of efficiency in practice, saving time and effort;
- constant self-control of the persons conducting the investigation, as well as quality control tools in the course of investigative actions.

In addition to the abovementioned rules, Kyrzhan L. (2005, p. 490) notes that the planning of criminal investigations also ensures the prevention of other crimes.

It is easy to see that the purpose of planning is subject to rules based on certain principles. On this occasion, the author Stancu E. stated: “In order to provide real scientific support for a criminal investigation, both in general and in each specific case, planning must be carried out according to certain basic rules and certain principles (2010, p. 152).

In support of the idea that there are three principles of planning an accident investigation: legality, individuality, and dynamism, according to many authors, the above principles are the general rules on which the organization and planning of a traffic accident investigation are based.

The authors Averyanova T., Belkin R., Rossinskaya E., indicate, in addition to these principles, also the principle of reality. This principle is important because these planned activities must not only be carried out but also take place at a predetermined time. At the same time, the reality principle presupposes the argumentation of conditionality and reality (2010, p. 463-464).

Scientist Ishchenko E. (Stancu E., 2010, p. 127) notes that there is also the principle of specificity, which involves specifying the tasks that need to be solved in the investigation process, setting deadlines and responsibilities.

The author Yablokov N. argues that, in addition to the principles listed above, there is also the principle of hypotheticality, arising from the objective legitimacy of the process of investigating a crime, manifested in the collection

and storage of the information in question, and a hypothetical explanation of the identified circumstances. (2001, p. 54).

Studying judicial practice in addition to these principles, I considered it appropriate to mention some principles that stand out and are equally important in organizing and planning an investigation of an accident, such as objectivity, efficiency, ensuring the safety of participants, fairness, duty. These principles can greatly facilitate the investigation of traffic accidents.

At the same time, the planning of any forensic activity is possible only under certain conditions, such as:

- the presence of a minimum of information;
- correct assessment of the situation in order to achieve the set goals;
- a clear and consistent relationship between individual plans.

Usually, any planning is targeted and highlights the following functions:

- simulation function;
- organizational and managerial function;
- scheduling sequence function.

Planning is the link between the purpose and objectives of criminal prosecution, on the one hand, and how they are carried out through specific actions, on the other hand. This element materializes for the purpose of criminal investigation, versions, and issues to be clarified, available methods and means. The full establishment of the crime and guilt of the perpetrator in a particular criminal case requires the determination of the goals or directions of the investigation based on the currently available results in question (Stancu E., 2002, p. 350).

As you know, in the process of investigating crimes and traffic accidents, there are three stages of research: initial, subsequent, and final.

Yablokov N. claims that at the initial stage, data on the circumstances of the case and in relation to the perpetrator are first identified and collected and then studied, especially those that may disappear over time. At the next stage, an accusation is usually brought forward, the accused is heard, and the problems that exist during the investigation of a particular case are resolved. In the final stage, the remaining unresolved issues are resolved, an indictment is drawn up, and other actions are taken to complete the criminal investigation (2001, p. 53). We agree with this interpretation and further strive to highlight the difficulties we face at the initial stage.

Successful research at the initial stage has a number of difficulties:

- a) lack of useful information and, at the same time, an excess of neutral and meaningless data (rumors) and disinformation;
- b) various forms of resistance to criminals and persons close to them to measures of investigation and prosecution;
- c) time constraint justified by the need to complete a large amount of work in a very short comparative time;

- d) the complexity of organizing the interaction of the criminal prosecution body with other participants;
- e) the absence in many cases of situations of a detailed investigation plan.

The above, but at the same time, other difficulties make it difficult for criminal prosecution officers to make optimal decisions at the initial stage of the investigation. In this regard, its characteristic features are the decisive importance of versions, the great role of the reflexive method and the rational use of the factor of surprise in the tactics of the primary actions of criminal prosecution, the increase in the level of interaction between operational workers, criminal prosecution workers, the formation of various operational-investigative groups.

Planning a criminal investigation summarizes several elements that are closely related to each other, which gives the plan a unified character.

Traditionally, the planning of any criminal case includes the following elements:

1. Setting planning tasks at different points in the study;
2. Development based on known factual data at a certain moment of possible objective versions.
3. Clarify the range of problems and facts that need to be established to check all the developed versions.
4. Definition of activities, the implementation of which is aimed at solving the above problems, as well as any of these tasks (Ciopraga, A., & Iacobuță, I. 2001, p. 212).
5. Establishing the timing and sequence of investigative actions.

The content and procedure for planning a particular case are determined by the volume and nature of the information at the disposal of the criminal prosecution authority at one time or another during the investigation.

In the process of investigating traffic accidents, an important role is given to the research plan. Studying the judicial practice of the Republic of Moldova on the investigation of traffic accidents, I found the following standard plan: a plan for a specific criminal case. Analyzing the literature, some scientists identify several types of plans that must be in the materials for the investigation of traffic accidents, such as a work plan for a certain period, a work plan for a specific investigative action, an action plan for interaction with other services. Lack of such planning often leads to a number of difficulties listed above.

Another important tactical element in developing a criminal investigation plan is choosing the right time to develop the plan. Premature preparation at a time when there is only brief information about the fact can lead the investigation in the wrong direction, which will affect both the quality of the investigation of the criminal case and the effectiveness of the measures taken, which will lead to a loss of time. Furthermore, planning at a later stage of a criminal investigation can lead to negative consequences for the conduct of a

criminal investigation, expressed in the non-fulfillment of certain activities or their implementation with delay.

The investigation plan for a specific case should include:

1. Initial and subsequent criminal-search measures and special investigative measures, the need for which is due to the nature of the act.
2. Versions are an important component of any plan, whether they relate to the act as a whole, the conditions or elements of the crime, or minor points.
3. The volume of circumstances to be proved, as well as criminal-search measures and special investigative measures, with the help of which the subject of evidence can be established (Mircea, I., 1999, p. 225).

Yablokov N. notes that the form of the plan can be commemorative, written, and graphic. With regard to the memorable form, he argues that we must regard it with certain skepticism since it can only exist as an intermediate form until the plan is drawn up in written or graphic form. The graphic form can be made using various geometric shapes, which are used less often due to the more complex execution technique. However, scientists claim that the plan's most common form is written (2001, p. 55).

Scientists Chopraga A., Yakobutse I. (2001, p. 214), Stancu E., Moise A. (2013, p. 185) also argue that several aspects determine the form of the plan. However, we will definitely mention at least two conditions: to be written and include planning elements. Only in this way is it possible to record all the details, the omission of which could harm the further development of the investigation.

The written form is dictated by the need to streamline, summarize and systematize a large amount of data, available information, as a rule, in any case of a certain complexity and which could not be stored in the memory of the body leading the criminal prosecution for a more or less long time, without the risk of loss and distortion. At the same time, such a plan will allow the judicial authority to monitor the progress of the investigation, check the planned activities, as well as those whose implementation will be necessary at some point (Chopraga A., & Yakobutse I., 2001, p. 214).

Planning at the initial stage of an investigation is usually characterized by a lack of information. It is important at this stage that we plan to carry out those criminal proceedings and special search activities that cannot be postponed and that will provide information that can expand the evidence base. In the case of an investigation of traffic accidents, it is necessary and necessary to plan investigative actions, such as field investigation, interrogation of eyewitnesses and other witnesses, victims, and drivers of vehicles involved in the incident. In the foreground, the tasks of these criminal procedural actions, their sequence, and the organization of their execution should be determined.

The setting of tasks at the initial stage of the investigation involves clarifying those issues that are to be clarified, the establishment of the time and place where the action will take place, the circle of participants, and the necessary technical and forensic means. In addition to these tasks, the following tasks should be clarified at this stage, such as: determining sources of evidence, detecting, fixing, researching, and summarizing evidence, establishing the causes and conditions that contributed to the traffic accident, etc. When planning activities at the initial stage of the investigation, it will be necessary to take into account the interaction of the criminal prosecution body with the bodies carrying out special search activities since, at this stage, there are often situations of searching for a vehicle and a driver who left the scene of an accident, other persons involved in an accident, unidentified eyewitnesses, etc.

In modern conditions of investigating certain categories of road accidents, it may be necessary to solve such problems as ensuring the safety of victims and eyewitnesses. This task is organizational and should be included in the research plan in particular.

Planning the next stage of the study is due not only to the collection of evidence but also to its systematization and evaluation. The position of the suspect, the accused, and the defense plays a special role in planning this stage. In the next stage, the principle of dynamism plays an exceptional role. At this stage, the plan is drawn up within limits established by the data available to the investigator, indicating as the case is supplemented with new materials.

Planning at the final stage of the investigation is determined by achieving all the objectives of the study, i.e., the truth in question is established. At this stage, the following actions are planned:

- bringing the materials of the case to the attention of the accused and the defense counsel;
- aimed at resolving the claims brought by the accused and his defense counsel;
- aimed at resolving the requirements presented by the head of the criminal prosecution body or the prosecutor;
- additional actions carried out by the criminal prosecution officer himself.

In the case of complex traffic accidents, it is often necessary to supplement the plan with various schemes, which will greatly facilitate the systematization of the particularly impressive material available in such cases.

Conclusions. In conclusion, we note that planning activity is often a necessary condition for solving a certain problem and therefore must be

understood and carried out in a dynamic and not fixed way, i.e., always the plan must be correlated with data obtained in the prosecution process.

Conflict of Interest and other Ethics Statements

The author declare no conflict of interest.

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Ліліан ЛУЧІН

**ОРГАНІЗАЦІЯ ТА ПЛАНУВАННЯ ПРОЦЕСУ РОЗСЛІДУВАННЯ
ДОРОЖНЬО-ТРАНСПОРТНИХ ПРИГОД В РЕСПУБЛІЦІ МОЛДОВА**

Анотація. Завдання даного дослідження визначаються суспільними відносинами, які виникають у зв'язку з виконанням спеціалізованими органами розслідування дорожньо-транспортних пригод. Таким чином, загальним об'єктом дослідження є національна та міжнародна доктрина у кримінально-процесуальному та криміналістичному аспекті розслідування дорожньо-транспортних пригод та особливо організації та планування цих процесів.

Ключові слова: розслідування, ДТП, відповідальність, соціальні відносини, організація, планування, транспортний засіб.

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**LEGISLATIVE SUPPORT ENFORCEMENT
OF COURT JUDGMENTS IN UKRAINE**

Abstract: The article is devoted to the study of normative – legal support of enforcement of court decisions through the prism of law enforcement practice.

Emphasis is placed on the elements of a developing democratic society, which is open to change, implementation and enforcement of court decisions used by citizens, where an important role is given to the legislation on the implementation of the rules of enforcement proceedings.

The changes taking place in Ukrainian society arouse high activity and the desire of people to take a direct part in solving problems that concern their common interests, including the use of the right to peaceful assembly. However, despite the importance of this type of political rights, the constitutional provisions on the protection of citizens' rights to a fair trial and enforcement of a court decision, which are still not properly specified in current legislation, are often limited or even violated.

The need to amend procedural legislation taking into account the latest advances in science; the presence of different positions of scientists on the understanding of the essence and content of legal relations at the stage of implementation of the decision; negative practice of execution of judicial acts in Ukraine, which leads to the appeal of

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Ukrainian citizens to the European Court of Human Rights.

The main innovation of the adopted laws and the basis of the concept of reform, which is laid down, is the introduction of the institution of private executors, which operates alongside the state executive service and performs the functions of enforcement of courts and other bodies.

Keywords: *Execution of a court decision, enforcement proceedings, execution of decisions, normative legal acts*

Topicality: At the same time, it should be noted that despite the increased level of activity of citizens in exercising the right to protection of their rights in the judiciary, which is a manifestation of democracy in our country, domestic legislation only partially regulates the protection of citizens' rights in case of inaction. Persons in execution of a court decision. Nevertheless, for countries with established democratic traditions, it is common practice to determine the basis for ensuring the right to guarantees of trial and enforcement in each case through the involvement of justice mechanisms. However, in Ukraine at present there is a steady trend of unpreparedness of the judiciary for prompt and impartial decision-making and enforcement by applying the rules of both national and international law, taking into account the mechanisms of interaction of law enforcement agencies, resulting in citizens all more often seek protection from the European Court of Human Rights. Therefore, the author emphasizes the importance of legal regulation of the mechanism of effective execution of a court decision, as this issue has become traditional throughout the period of independence.

Ensuring the enforcement of court decisions should be one of the priorities of public policy, and therefore requires comprehensive research and improvement.

Legal provision, given the variety of scientific and theoretical definitions, is characterized by the mandatory presence of purposeful influence without which it seems impossible to regulate social relations. Equally important is the mandatory use of a certain set of public remedies, as the main subject of the use of force on subordinate objects is the state. Finally, the effectiveness of legal support depends entirely on the system of normative and individual legal acts that make it up and determine the legal requirements that give the sphere of normative influence signs of order.

In general, legal support can be represented as a system of legal norms established and maintained by the state, aimed through legal prescriptions and a set of legal means to regulate public relations, their legal consolidation, protection, protection, implementation and development.

At the same time, today, according to the results of statistics on the execution of court decisions and real indicators of enforcement of court decisions by state executors and private executors who are authorized to enforce court decisions in accordance with the law, illustrate the picture of insufficiently developed mechanisms and tools related to the possibility of enforcement of a court decision and protection of the rights of citizens.

As evidenced by the need to finalize the legislation and adopt corrective articles, acts, etc.

The basis of normative (legal) enforcement of court decisions and the application of enforcement of court decisions is the formation and streamlining of its regulatory framework as a legal means of achieving real order of the system of relevant means and their effectiveness. It is the regulatory framework is a kind of organizational and functional image of the management system, expressed in legal language, which corresponds to its purpose.

In general, this system of legal prescriptions, rules, norms and standards can also be called "legislation", and this term received a normative official interpretation in one of the decisions of the Constitutional Court of Ukraine, which states that it is used in part three of Art. 21 of the Labor Code of Ukraine (Code of Labor Laws of Ukraine dated 10.12.1971 no. 322-VIII) on defining the scope of the contract as a special form of employment contract, and covers the laws of Ukraine, current international agreements of Ukraine, binding consent of the Verkhovna Rada of Ukraine, as well as resolutions of the Verkhovna Rada of Ukraine, Presidential decrees Of Ukraine, decrees and resolutions of the Cabinet of Ministers of Ukraine, adopted within their powers and in accordance with the Constitution of Ukraine and laws of Ukraine.

At the same time, the outlined list seems incomplete, because, in our opinion, it should be supplemented by regulations of central and local executive bodies, local governments, etc.

The above legal acts of different legal force and purpose can be considered as fundamental sources that create the basis for all other, less legal, but no less important regulations in the field of enforcement of court decisions.

We would like to focus on the fact that the legal basis for the functioning of the judicial system, the system of bodies authorized to enforce court decisions and the possibility of enforcement of court decisions are the Constitution of Ukraine of June 28, 1996, the Law of Ukraine persons who carry out enforcement of court decisions and decisions of other bodies".

The Constitution of Ukraine in any legal field is a fundamental legal act, which contains a specific list of fundamental rights and freedoms of man and citizen, functions and powers of all branches of government in Ukraine, and notes the features of justice in Ukraine.

A separate block of normative legal support consists of normative legal acts of national legislation that regulate the procedure and special procedures for enforcement of court decisions, features of liability of officials and the administration of justice in general. Such legal acts include the Law of Ukraine "On State Executive Service" (On the State Executive Service: Law of Ukraine of March 24, 1998 no. 202/98-VR). The peculiarity of this legal act is that it specifies the main criteria for ensuring

the enforcement of court decisions. It is also noted that the obligation to monitor compliance with enforcement of court decisions rests with the State Enforcement Service.

The Law of Ukraine “On Enforcement Proceedings” (On Enforcement Proceedings: Law of Ukraine of 02.06.2016 no. 1404-VIII) contains the main provisions on the basic requirements for the execution of court decisions, as well as on persons who are required by law to enforce such decisions and persons who have the authority to monitor the execution of such judgments, and in case of non-compliance to apply appropriate sanctions.

Law of Ukraine “On bodies and persons carrying out enforcement of court decisions and decisions of other bodies” (On bodies and persons who carry out enforcement of court decisions and decisions of other bodies: Law of Ukraine of 02.06.2016 № 1403-VIII). This law states the obligation of the State Executive Service of Ukraine to control and ensure the enforcement of court decisions by a person. The main tasks and functions of the State Executive Service of Ukraine, as well as the basic requirements for candidates for this position are indicated.

It should be noted that each of the above documents is important not only in the aggregate, but also in its own way, because each of them provides a particular area of legal relations, which must comply with current international law. It is obvious that the introduction of positive practice of internationally accepted legislation not only affects the level of social security of the population in the country, but also the legitimacy of a state that adheres to current international law.

Law of Ukraine “On the implementation of decisions and application of the case law of the European Court of Human Rights” (On the execution of decisions and application of the case law of the European Court of Human Rights: Law of Ukraine of February 23, 2006). This law is very important for national law, because the application of the case law of the European Court of Human Rights (hereinafter – the ECtHR) is a necessary condition for the administration of justice, because decisions taken at the ECtHR level are binding in each country. Of the European Union. The Constitution of Ukraine takes into account the main provisions of this law, namely the basic principles of application of the case law of the European Court of Human Rights in human rights cases, which is a positive aspect of the adaptation of current national legislation to international standards.

Given the importance of the above regulations, a necessary condition for improving the efficiency of the institution of enforcement of court decisions is to amend not only the current national legislation, but also to develop effective recommendations to ensure the proper functioning of this legal institution. The creation of the Unified Register of Enforcement of Judgments is one of the methods to improve the functioning of the enforcement mechanism, as a systematized information system can not only facilitate the daily work of authorized persons who monitor enforcement,

but also increase the efficiency of such enforcement.

In addition, practice shows that court decisions are often subject to appeal by the persons against whom the relevant decisions are made, so the creation of a Unified Register of Persons Appealing Enforcement in the ECtHR can serve as a kind of clue as to why such decisions can be appealed.

First of all, these are laws that are normative legal acts of the highest legislative body, which is the Verkhovna Rada of Ukraine, which regulate the most important public relations, including law enforcement, express the will and interests of the majority of the population, embody basic human rights, other universal values and have the highest legal force over all other legal norms.

The most important in terms of importance and place in the system of legislation is the Constitution of Ukraine (Basic Law), adopted on June 28, 1996 (Constitution of Ukraine: Law of Ukraine of June 28, 1996), the rules of which regulate the system of economic, political, social, spiritual and organizational relations in the state. The importance of this legal act in maintaining the legal regime of legality in the activities of patrol police units should not be underestimated, which is due to the enshrinement in Article 8 of the principles of the rule of law, according to which, having the highest legal force, the Constitution of Ukraine is a guideline other normative legal acts, organization of judicial proceedings, protection of human and civil rights and freedoms, guaranteeing the security of a person and legitimate performance of functional duties to persons authorized to execute court decisions. Therefore, its relevant norms are the legal basis for all activities of the judiciary, current legislation and lawmaking on issues of enforcement of court decisions.

The Laws of Ukraine “On Civil Service” are among the laws that regulate specific issues of guarantees of judicial proceedings for the enforcement of court decisions through the authorized activity of persons entitled to such competence.

The Law of Ukraine “On Civil Service” (On civil service: Law of Ukraine of 10.12.2015 no. 889-VIII), which contains a definition of civil service, states the basic principles of civil service in Ukraine, defines different categories of persons who belong to civil servants. In addition, this law contains the basic rules of selection, or rather the competition, according to which the selection for the position of civil servant, as well as the procedure and conditions of civil service in Ukraine.

Special attention should be paid to codified regulations, in particular, the Code of Administrative Offenses of Ukraine and the Code of Administrative Procedure. Most of the rules on enforcement of judgments contained in the Code of Administrative Offenses apply to members of the National Police, which only strengthens their responsibilities for enforcing judgments.

Regarding the Code of Administrative Procedure, it should be noted

that this code specifies not only the main stages and mechanisms of administrative proceedings, but also regulates the timing of enforcement proceedings, the procedure and features of such enforcement proceedings, the procedure for appealing court decisions, and rules that relate to exactly how the enforcement of court decisions should take place.

The legal basis is also bylaws of the competent authorities, issued on the basis of laws and for their implementation. One of the main types of such regulations of state bodies are resolutions of the Verkhovna Rada of Ukraine and the Cabinet of Ministers of Ukraine. Such documents include, in particular, the Order of the Ministry of Justice of Ukraine dated 02.04.2012 №512 / 5 “On approval of the Instruction on the organization of enforcement of court decisions”, the Order of the Ministry of Justice of Ukraine dated 22.10.2018 № 3284/5 “On approval of the Procedure for inspections activities of state executive service bodies, private executors”.

Order of the Ministry of Justice of Ukraine dated 02.04.2012 №512 / 5 “On approval of the Instruction on the organization of enforcement of court decisions” (On approval of the Procedure for conducting inspections of the activities of state executive service bodies, private executors: Order of the Ministry of Justice of Ukraine dated 22.10.2018 no. 3284/5). This order regulates clearly defined issues of judicial proceedings and enforcement of court decisions through authorized persons who have specific rights and responsibilities in the course of their official activities.

This Order also defines the basic concepts related to the enforcement of court decisions, namely, the status of private and public executors, the National Police, as well as other authorized persons who exercise control over the enforcement of court decisions.

Another Order “On Approval of the Procedure for Inspections of the Bodies of the State Enforcement Service, Private Enforcement Agents” regulates the activities of bodies and authorized persons who inspect persons and institutions that control the enforcement of court decisions. This order provides specific regulations for the legal status of state executors, private executors, national police bodies and other authorized bodies.

Quite important place in the legal regulation of enforcement of court decisions, maintaining in its work a strict awareness of the importance of compliance with the principle of legality by each employee also occupy departmental legal acts of the Ministry of Internal Affairs of Ukraine (National Police of Ukraine). fulfillment of the tasks and responsibilities assigned to it during their involvement in the enforcement of court decisions. Such documents include the Law of Ukraine “On State Protection of Court and Law Enforcement Officials” (On state protection of employees of courts and law enforcement agencies: Law of Ukraine of December 23, 1993), the Law of Ukraine “On Administrative Supervision of Persons Released from Prisons” (UN Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment of 10 December 1984,

no. 13, art. 108).

The main task entrusted to law enforcement agencies is to ensure the fundamental rights and freedoms of citizens. Thanks to the above-mentioned normative legal acts, the police acquire powers to ensure the legal status of citizens not only in the field of administrative proceedings, but also in the enforcement of court decisions.

Regarding the Law of Ukraine “On State Protection of Court and Law Enforcement Officials” (On state protection of employees of courts and law enforcement agencies: Law of Ukraine of December 23, 1993), it clearly states that judges of all parts of the judiciary, as well as law enforcement officers must be protected from illegal influence on the exercise of their powers, as well as from encroachment. For the life and health of them and their family members. This law establishes the types of protection of such persons, which are guaranteed at the state level and must be provided by it.

It should be noted that the above legal acts require the involvement of a large number of personnel to implement the rules provided by these laws. Unfortunately, the lack of personnel in the law enforcement sphere has a negative impact on the exercise of police powers in the field of enforcement of court decisions, as well as in ensuring the legal rights and freedoms of citizens, in particular judges or other law enforcement officers.

Characteristics of regulatory and legal support from the standpoint of the legal force of legal acts, which achieve the principles outlined in the legislation, does not give a complete picture of the status, types and features of regulations and their impact on relevant social relations.

It follows with certainty that the legal basis for enforcement of court decisions is a set of laws and regulations, including international ones, which already have positive experience in ensuring enforcement of court decisions.

Judicial reforms in Ukraine are often focused on European and international standards in the field of justice. The main disadvantage of the judicial system in Ukraine is that judges elect judges, which significantly affects the level of public confidence in the judiciary. The model of establishing judicial administrative institutions was widespread in the mid-2000^s, and most of its members were judges elected by judges. Many Central and Eastern European countries have introduced the standard “Judges elected by judges” for their judiciary. What are the European and international standards in the field of justice? If the judiciary is deprived of political influence and the institutions are independent, then the entire judiciary will be independent. After all, this is how the judiciary works in Western Europe. At the same time, the president or parliament cannot significantly interfere in the administration of the judiciary, nor can they put pressure on judges or “pull” the people concerned. Judges can hear cases against senior officials or their interests without worrying about losing their positions (On approval of the Procedure for conducting inspections of the activities of state executive service bodies, private executors: Order of the

Ministry of Justice of Ukraine dated 22.10.2018 no. 3284/5., p. 154)

As a result, it should be noted that high-quality legislative support and regulation of the judicial system of Ukraine and the institution of enforcement of decisions depends not only on the constant reform of national legislation. International standards are of great importance, which aim not only to ensure the efficiency of the judicial system, but also to increase the percentage of public confidence in the performance of judges' main tasks.

Also noteworthy is not only the introduction of international standards, but also their appropriate practical implementation, which, unfortunately, at the level of national legislation does not work to a sufficient extent. Therefore, in order to achieve the effectiveness of the implementation of these international acts, it is necessary to fully reform the current national legislation, highlight the main shortcomings, and eliminate them by applying the rules of international law in the field of enforcement of court decisions.

Conflict of Interest and other Ethics Statements

The author declare no conflict of interest.

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Віра МОРОЗ

ЗАКОНОДАЧЕ ЗАБЕЗПЕЧЕННЯ ВИКОНАННЯ СУДОВОГО РІШЕННЯ В УКРАЇНІ

Abstract. Стаття присвячена дослідженню нормативно-правового забезпечення виконання судових рішень крізь призму правозастосовчої практики.

Акцентовано на елементах демократичного суспільства, що розвивається, відкритого для зміни, виконання та виконання судових рішень, які використовуються громадянами, де важлива роль відводиться законодавству щодо реалізації правил виконавчого провадження.

Зміни, що відбуваються в українському суспільстві, викликають високу активність та бажання людей брати безпосередню участь у вирішенні проблем, які стосуються їх спільних інтересів, зокрема використання права на мирні зібрання. Проте, незважаючи на важливість цього виду політичних прав, конституційні положення щодо захисту прав громадян на справедливий суд і виконання судового рішення, які й досі належним чином не конкретизовані в чинному законодавстві, часто обмежуються або навіть порушуються.

Необхідність внесення змін до процесуального законодавства з урахуванням останніх досягнень науки; наявність різних позицій науковців щодо розуміння сутності та змісту правовідносин на етапі виконання рішення; негативна практика виконання судових актів в Україні, що призводить до звернення громадян України до Європейського суду з прав людини.

Основним нововведенням прийнятих законів та основою концепції реформування, що закладається, є запровадження інституту приватних виконавців, що функціонує поряд з державною виконавчою службою та виконує функції примусового виконання судів та інших органів.

Ключові слова: Виконання судового рішення, виконавче провадження, виконання рішень, нормативно-правові акти

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EVALUATING THE EFFECTIVENESS OF THE ELECTRONIC (REMOTE) JUSTICE MODEL IN GEORGIA IN TERMS OF EXERCISING THE RIGHT TO A FAIR TRIAL

Abstract. The paper discusses the effectiveness of the electronic (remote) justice model in Georgia. For this aim, public opinion has been examined taking into account the pros and cons and perspectives of remote justice. Despite the “speed and cheapness”, the efficiency of a fair trial has been revealed to be low: existing videoconferencing technology affects the objectivity of the parties’ assessment of evidence and arguments, the formation of a judge’s internal belief in decision-making, and so on. A discussion proposal on a new model of remote administration of justice has been developed.

Keywords: *Remote Justice Model, Model Effectiveness Evaluation, Public Opinion, Law Theory, Management Theory, Decision Making*

Introduction. The explosion of COVID-19 has become a serious challenge for the electronic (remote) justice process. It is no longer disputed that the long-established legal procedures for a fair trial have been delayed in 2020-2021

(P. Gori & A. Pahladsingh, 2021). It is also a fact that videoconferencing is not a new tool of remote justice (Multi-annual European e-Justice action plan 2009-2013), but the experience of conducting litigation of the judiciary's declaration and guidelines in different countries is invaluable in the formation of the European Commission on the effectiveness, in the context of the COVID-19 pandemic (The European Commission for the Efficiency of Justice).

Analysis of recent research and publications. On March 13, 2020, the High Council of Justice adopted several recommendations regarding measures to be taken in the judiciary to prevent the possible spread of coronavirus in Georgia, including the remote holding of court hearings (Recommendation of the High Council of Justice of Georgia). The decree of the President of Georgia of March 21, 2020, with the force of organic law, restricted the right of all persons involved in the process, to refuse to hold a

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remote session on the grounds of direct participation in it (On Approval of Decree no 1, March 21, 2020).

After annulment of emergency state in the country (May 23, 2020), the Criminal Procedure Code was establishing a temporary rule for the administration of remote justice (it was in force until July 15, 2020). Under current law, a remote trial can take place if the accused, convicted or acquitted has given consent or has been deprived of his or her liberty and/or remotely remanded in custody that could jeopardize the opening of a crime or the public interest in prosecution (Criminal Procedure Code of Georgia, no. 1772).

The purpose of the article is to show how the online conferencing systems Cisco Webex and others adhere to the principles of remote justice in criminal proceedings, such as the principle of confidentiality with a lawyer, the principle of fair trial, the principle of objectivity, and more.

The paper is organized as follows. The main goals and objectives of the research and the ways their implementation are described in Item 2. The effectiveness of the existing model of remote justice is evaluated in Item 3. A discussion of the pros and cons of remote justice is given in Item 4. Public opinion on the prospects of remote justice in the Georgian judiciary is presented in Item 5. Conclusions both general and for judgment are presented in Item 6.

The essence of sociological research (main goals and objectives). The main purpose of the sociological research is to examine the citizens' attitude towards the alleged shortcomings in the process of remote justice and the use of new technologies.

The tasks performed to achieve this goal are: identifying the pros and cons of remote justice; assessing public perceptions/expectations regarding the effectiveness of remedial justice; determining the perspectives of remote justice in the Georgian court system.

Formulation of the main material. An e-Justice Assessment Questionnaire was developed to achieve this goal. Research was based on the study of an event in one stretch of time. In particular, the investigation was conducted from February 1, 2021 to March 1, 2021 in the Tbilisi City Court. Both closed and open-ended questions were used in the study. The methods used in the studies are: survey, analysis of survey results (including multidimensional data analysis techniques, correlation analysis, methods of inference). The forms of survey methods are anonymity and confidentiality. The data obtained from the survey were processed using SPSS, a well-known and widely tested statistical computer package for data processing (J. Buhl & P. Zofel, 2001).

People with different social statuses was involved in the study, such as: judges, court officials, private and public sector employees, citizens with unemployed status. In total, 200 people (100 females and 100 males) participated in the study, whose percentage by social status is shown in Figure 1.

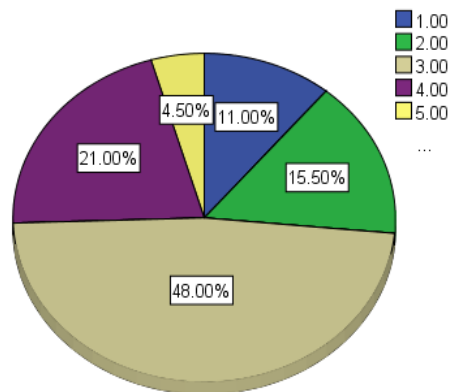


Figure 1 – Percentage of people by social status that were participating in the study.

1. Judge – 22 (11 %); 2. Court officials – 31 (15.5 %); 3. Employed in the private sector – 96 (48 %); 4. Employed in the public sector – 42 (21 %); 5. Currently unemployed – 9 (4.5 %).

At the stage of realizing the sociological research, subjects with relevant experience of participation in distance justice were selected. In particular: 1. Party to the process (121 (60.5 %) persons); 2. Judge (22 (11 %) persons); 3. Other participants in the process (session secretary, witness, translator, etc. A total of 57 (28.5 %) persons).

The incorporation of study participants into age groups is shown in Figure 2.

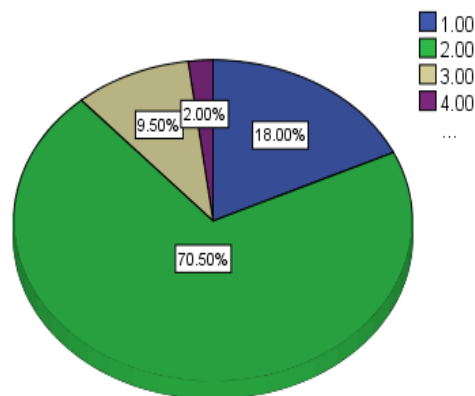


Figure 2 – Diagram of the division of people in the study into age groups.

1. From 18 to 30 (18 %); 2. From 20 to 45 (70.5 %); 3. From 45 to 60 (9.5 %); 4. 60 and over (2 %).

It should be noted that the gender of the respondents generally plays an important role in the process of realization of various sociological study. Accordingly, at the initial stage of processing the information obtained from the study, the hypothesis was tested as to how different the opinions of the men and

women participating in the presented study were. As no statistical difference was found between the different sexes as a result of the statistical processing of the obtained data, further analysis of the obtained data was carried out according to the opinions of all the respondents (women and men together). The obtained data were divided into three parts according to the goals and objectives of the research topic:

- Evaluation of the effectiveness of the existing model of remedial justice in terms of realization of the right to a fair trial;
- The pros and cons of remote justice;
- Public Opinion and Expectations on the Perspectives of Remote Justice in the Georgian Judiciary.
- The analysis of the results of the social survey was carried out according to separate parts.

Evaluation of the effectiveness of the existing model of remedial justice in terms of realization of the right to a fair trial

This part of the study, in turn, is divided into 4 sub-questions: 1) court access; 2) public hearing; 3) equality of the parties; 4) Possibility of confidential communication with a lawyer.

Court access

In order to assess the accessibility of remote litigation, respondents answered the question: Was the remote litigation, presented in its current form, an obstacle for you?

The distribution of respondents' answers by age groups and social status is presented in Figure 3.

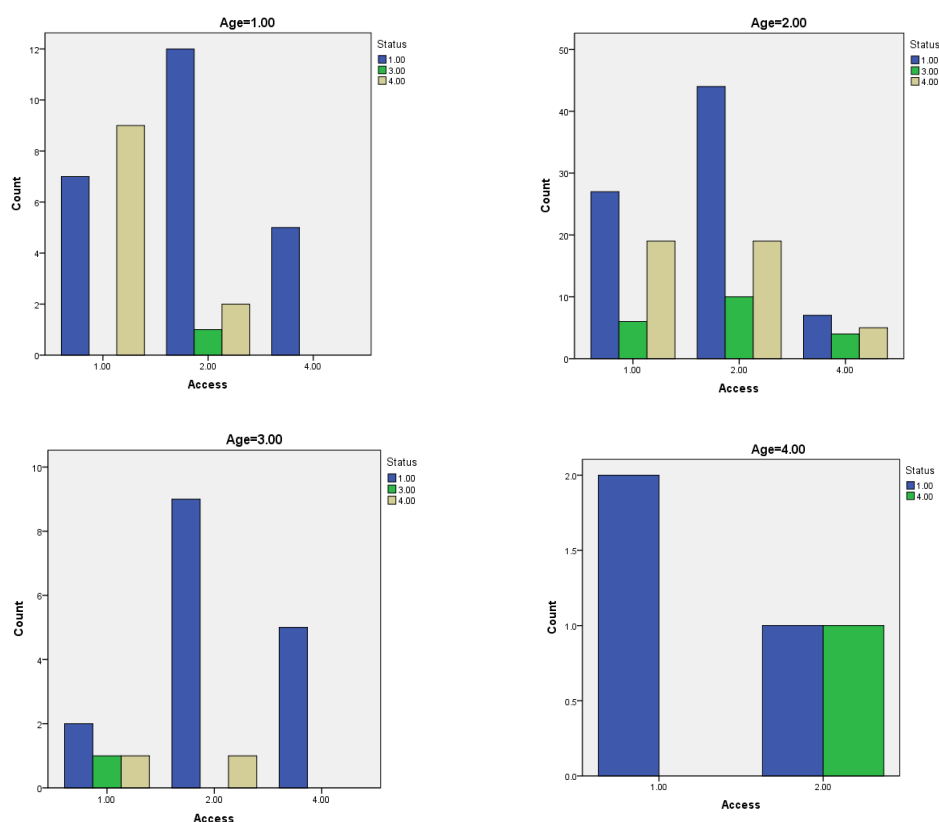


Figure 3 – Distribution of respondents' answers by age groups and social status.

The chi-square criterion and correlation analysis were used to determine the obstacle to remote litigation (see Tables 1 and 2).

Table 1

The results of using the chi-square criterion.

Chi-Square Tests

Age		Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
1.00	Pearson Chi-Square	10.335 ^a	4	.035		
	Likelihood Ratio	11.952	4	.018		
	Linear-by-Linear Association	6.496	1	.011		
	N of Valid Cases	36				
2.00	Pearson Chi-Square	3.511 ^b	4	.476		
	Likelihood Ratio	3.293	4	.510		
	Linear-by-Linear Association	.004	1	.947		
	N of Valid Cases	141				
3.00	Pearson Chi-Square	5.819 ^c	4	.213		
	Likelihood Ratio	5.574	4	.233		
	Linear-by-Linear Association	2.476	1	.116		
	N of Valid Cases	19				
4.00	Pearson Chi-Square	1.333 ^d	1	.248		
	Continuity Correction ^e	.000	1	1.000		
	Likelihood Ratio	1.726	1	.189		
	Fisher's Exact Test				1.000	.500
	Linear-by-Linear Association	1.000	1	.317		
	N of Valid Cases	4				
Total	Pearson Chi-Square	7.052 ^f	4	.133		
	Likelihood Ratio	6.913	4	.141		
	Linear-by-Linear Association	3.012	1	.083		
	N of Valid Cases	200				
	Pearson Chi-Square	7.052 ^f	4	.133		

a. 7 cells (77.8 %) have expected count less than 5. The minimum expected count is .14.

b. 2 cells (22.2 %) have expected count less than 5. The minimum expected count is 2.27.

c. 8 cells (88.9 %) have expected count less than 5. The minimum expected count is .21.

d. 4 cells (100.0 %) have expected count less than 5. The minimum expected count is .50.

- e. Computed only for a 2x2 table
- f. 1 cells (11.1 %) have expected count less than 5. The minimum expected count is 2.86.

Table 2

The results of correlation analysis.

Symmetric Measures						
Age			Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.
1.00	Interval by Interval	Pearson's R	-.431	.090	-2.784	.009 ^c
	Ordinal by Ordinal	Spearman Correlation	-.476	.125	-3.160	.003 ^c
	N of Valid Cases		36			
2.00	Interval by Interval	Pearson's R	.006	.084	.066	.947 ^c
	Ordinal by Ordinal	Spearman Correlation	-.039	.085	-.464	.643 ^c
	N of Valid Cases		141			
3.00	Interval by Interval	Pearson's R	-.371	.131	-1.647	.118 ^c
	Ordinal by Ordinal	Spearman Correlation	-.437	.167	-2.001	.062 ^c
	N of Valid Cases		19			
4.00	Interval by Interval	Pearson's R	.577	.289	1.000	.423 ^c
	Ordinal by Ordinal	Spearman Correlation	.577	.289	1.000	.423 ^c
	N of Valid Cases		4			
Total	Interval by Interval	Pearson's R	-.123	.068	-1.744	.083 ^c
	Ordinal by Ordinal	Spearman Correlation	-.154	.070	-2.198	.029 ^c
	N of Valid Cases		200			

- a. Not assuming the null hypothesis.
- b. Using the asymptotic standard error assuming the null hypothesis.
- c. Based on normal approximation.

Analyzing the obtained data, with a significance level of 0.95, we conclude that for the respondents of the second, third and fourth age groups, between the answers on the parameters Access (did the existing remote proceedings constitute an obstacle for you? (4 rankings)) and Status (What status did you participate in the hearing? (4 rankings)) there exist a correlation (the significance level of the Spearman correlation coefficient is > 0.05), though for the third age group this correlation is very weak. For the first age group, as well as for the combined group of all respondents as a whole, such an attitude does not exist with a confidence level equal to 0.95. This is especially evident for the first age group. On the other hand, with a significance level of 0.98, we can conclude that such an attitude exists for

the united group of all respondents.

It should be noted that the first age group (18-30 years old) does not include persons with the status of a juror. And, the distribution of persons with the status of party to the process (1), judge (3) and other participants in the process (4) (translator, witness, etc.) is presented in the graph, which shows that all participants had the appropriate skills (see Figure 3, first diagram). Similar results were observed in the second (from 30 up to 45 years) and third (from 45 up to 60 years) age groups (see Figure 3, 2 and 3 diagrams). As for the fourth age group (60 and over), here (the oldest) were represented only persons with the status of party to the process (1) and other participants in the process (4) (translator, witness, etc.), who were distributed according to the graph, which shows that some of the persons with the status as party to the process (1) had technical problems, while some (about twice less) of party to the process (1) and other participants in the process (4) (translator, witness, etc.) did not have relevant skills (see Figure 3, 4st diagram).

Based on the above, we conclude: parameter Age affect the dependence of the parameters Access and Status on the whole (the significance levels of the chi-square statistics is > 0.05) (see Table 1), i.e. this dependence exists for all age groups, which means that the status of the proceedings depends on the status of the person, except for age group 1 (from 18 up to 30 – the youngest), for which the significance level of chi-square statistics is equal to 0.035 (< 0.05). On the basis of told, we conclude that the convenience of existing form does not depend on the status of the person of the first age group. However, it should be noted that the reliability of these conclusions is very low, as for most cases of possible combinations of values of the parameters under consideration, the number of observations does not exceed 5 (see notes at the end of Table 1), while for reliable use of this criterion should exceed 20.

The following groups of sociological study parameters were examined similarly:

- investigation of remote process publicity by social status and age;
- investigation of the equality of the parties in the process of remote consideration, according to the social status;
- fixation of the pros and cons of remote justice, according to social status;
- investigation of public views on the convenience of remote litigation, according to social status;
- determining public expectations on the perspectives of introducing remote litigation into the Georgian judicial system, according to social status.

Based on the analysis of the obtained results, the main conclusions of the presented paper were made.

Public consideration

In order to evaluate the principle of publicity of the trial in the distance justice process, the respondents answered the question: was the principle of publicity of the process observed during the remote proceedings

safeguarded, in your experience?

Respondents gave the following answers to the question:

Process side

1. Yes, in all cases (11.5 %);
2. Basically was protected but in some cases not (11.0 %);
3. Was not safeguarded (38.0 %).

Judge

1. Yes, in all cases (4 %);
2. Basically was protected but in some cases not (2 %);
3. Was not safeguarded (5 %).

Other participant in the process

1. Yes, in all cases (13.5 %);
2. Basically was protected but in some cases not (7 %);
3. Was not safeguarded (8.0 %).

Overall, 51 % of respondents believe that the principle of public hearing was not observed in the existing form of remote court proceedings. 29 % of respondents believe that the principle of public hearing was observed, while 20 % believe that it was mostly observed, although in some cases it was not so.

Although no one in the world criticizes remote justice in terms of the publicity of the process and believes that the electronic court system should be the means of ensuring publicity, the results of the survey make it clear that publicity measures are necessary to be developed in the case under consideration.

Equality of the parties

At the stage of remote court hearing, in order to assess the observance of the principle of equality of participated sides, the respondents answered the question: did the parties involved in the process have an equal opportunity to present their positions? Obtained answers were distributed as follows:

Process side

1. Yes, in all cases (46 %);
2. Mostly yes, although in some cases there were technical problems (13 %);
3. No (1.5 %).

Judge

1. Yes, in all cases (9 %);
2. Mostly yes, although in some cases there were technical problems (2 %);
3. No (0 %).

Other participant in the process

1. Yes, in all cases (28 %);
2. Mostly yes, although in some cases there were technical problems (5 %);
3. No (0 %).

Overall, a positive trend was observed in terms of adherence to the principle of equality of the parties. In particular, 83 % of respondents

believe that in the process of remedial justice, the parties had equal opportunities to present their positions in court. 15.5 % of the respondents believe that in terms of equality of the parties, in some cases there were problems of a technical nature, although in the main case the equality of the parties was maintained, while only 1.5 % of the respondents stated that equality of the parties was not observed in the remote justice process.

Adherence to the principle of equality of parties in the process of administering remote justice is less dependent on artificial intelligence and it relies mainly on traditional forms of administering justice. Therefore, in the process of developing a new model, technical guarantees for ensuring the principle of equality should be taken into account.

Possibility of confidential communication with a lawyer

In order to evaluate the issue, the respondents were asked the following question: did the defendant have the opportunity to communicate confidentially with a lawyer during the remote proceedings?

Respondents gave the following answers to the question:

Process side

1. Yes (8.5 %);
2. No (42 %);
3. In some cases yes, but in some cases not (4.5 %);
4. I have not encountered a similar case (5.5 %).

Judge

1. Yes (2.5 %);
2. No (4 %);
3. In some cases yes, but in some cases not (2.5 %);
4. I have not encountered a similar case (2 %).

Other participant in the process

1. Yes (10 %);
2. No (15 %);
3. In some cases yes, but in some cases not (2.5 %);
4. I have not encountered a similar case (1 %).

In total, 61 % of the respondents stated that the defendant did not have the opportunity to communicate confidentially with a lawyer during the remote proceedings.

As international practice shows, the transition to e-justice has been done on the basis of resolving disputes “fairly, quickly and cheaply”, but the parties must show what are the real dangers of “unfair resolution” in addition to technical inconvenience (On Approval of Decree no 1, March 21, 2020). As the results of the survey showed, the human rights standard has been violated. Accordingly, guarantees of confidentiality as to the privilege of the accused and the provision of a fair trial should be developed, using electronic technologies in the administration of justice.

Pros and cons of remote justice

The second part of the study, which was devoted to the analysis of the pros and cons of remote justice, in turn was divided into two sub-questions: 1) The positive side of remote justice; 2) The negative side of remote justice.

The positive side of remote justice

In order to evaluate the advantages of remote justice, respondents were asked the following question: what are the advantages of e-justice in your opinion?

The respondents gave the following answers to the question:

Process side (60.5 %)

1. Justice proceedings is faster, cheaper and more efficient (31.5 %);
2. Justice proceedings is free from the emotional influence of the parties (participants) (1.5 %);
3. It is easy for people with disabilities to participate in the process (16 %);
4. All of the above listed (7.5 %);
5. I do not agree with any of the answers (4 %).

Judge (11.0 %)

1. Justice proceedings is faster, cheaper and more efficient (8.5 %);
2. Justice proceedings is free from the emotional influence of the parties (participants) (0 %);
3. It is easy for people with disabilities to participate in the process (1.5 %);
4. All of the above listed (1 %);
5. I do not agree with any of the answers (0 %).

Other participants in the process (28.5 %)

1. Justice proceedings is faster, cheaper and more efficient (19 %);
2. Justice proceedings is free from the emotional influence of the parties (participants) (5 %);
3. It is easy for people with disabilities to participate in the process (5 %);
4. All of the above listed (2.5 %);
5. I do not agree with any of the answers (1.5 %).

For the evidence, the answers are presented in Figure 4.

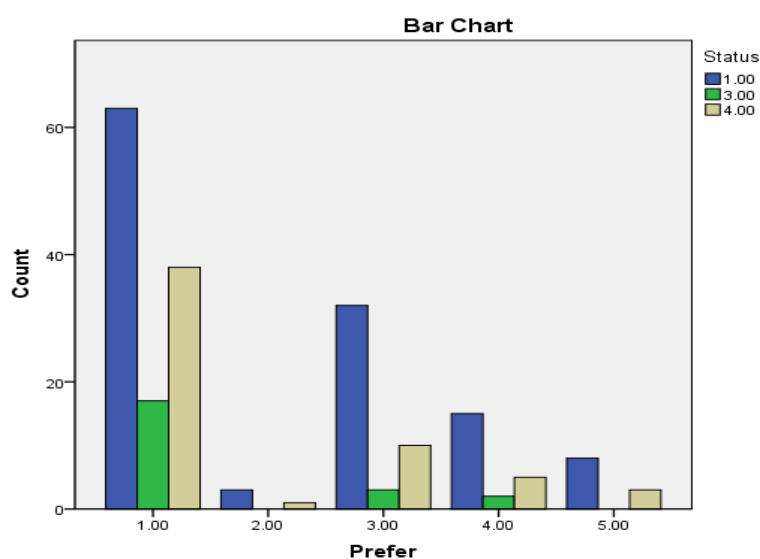


Figure 4 – Distribution of survey results to evaluate the pros of remote justice

Overall, considering that the 4th answer includes the first answer, it can be concluded that 70 % of the respondents name the speed, cheapness and efficiency of remote justice as the main positive side of e-justice; 22 % think it is easy for people with disabilities to participate in the process; 2.2 % believe that the court is free from the emotional influence of the parties (participants) in e-justice; 5.5 % disagreed with either answer.

It is interesting that according to the results of the survey presented in Item 5, respondents reported negative attitude to the access to court, equality of the parts and confidential communication with a lawyer (61 %). Nevertheless, the vast majority of respondents (70 %) view e-justice positively. The emphasis is on speed and affordability in this case. We will not analyze the imbalance between entitlement and need in this study. But one thing is clear, the new model of remote justice must maintain the signs of speed and cheapness and, at the same time, ensure the practical implementation of the traditionally established principles of a fair trial (accessibility, confidentiality, equality of the parts).

The negative side of remote justice

To assess the disadvantages of distance justice, respondents answered the question: “what are the disadvantages of e-justice in your experience?”

The answers to the question were distributed as follows.

Process side (60.5 %)

1. The evidence cannot be fully examined (3.5 %);
2. The legal status of the accused has deteriorated (2 %);
3. There are technical problems in the courtroom (no sound, bad image, bad internet, etc.) (40.5 %);
4. All of the above issues (8 %);
5. It has not negatives sides (6.5 %).

Judge (11%)

1. The evidence cannot be fully examined (1 %);
2. The legal status of the accused has deteriorated (5 %);
3. There are technical problems in the courtroom (no sound, bad image, bad internet, etc.) (6 %);
4. All of the above issues (1 %);
5. It has not negatives sides (2.5 %).

Other participants in the process (28.5 %)

1. The evidence cannot be fully examined (5 %);
2. The legal status of the accused has deteriorated (0 %);
3. There are technical problems in the courtroom (no sound, bad image, bad internet, etc.) (10 %);
4. All of the above issues 4 %;
5. It has not negatives sides (13.5 %).

For the evidence, the distribution of the obtained answers is presented in Figure 5.

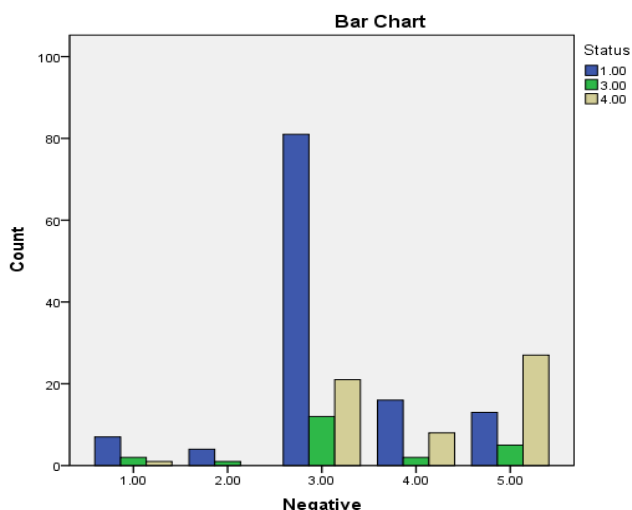


Figure 5 – Distribution of survey results to assess the disadvantages of remote justice

The obtained answers show that 57 % of the respondents consider the main negative side of e-justice to be the technical problems in the courtroom (no sound, bad image, bad internet, etc.).

Public Opinion/Expectations on Prospects for Remedial Justice in the Georgian Judiciary

The third part of the research, which was dedicated to the study of public opinion/expectations on the perspectives of remote justice in the Georgian judicial system, in turn was divided into two sub-questions: 1) Determining public views on the convenience of remote litigation; 2) Determining the public expectations on the prospects of introducing remote legal proceedings in the Georgian judicial system.

Investigation of public opinions on the convenience of remote litigation

In order to study the convenience of remote litigation, respondents were asked the following question: how comfortable was the communication in the courtroom during the remote justice process?

The distribution of the answers to the question according to the four levels of comfortability is presented in Figure 6.

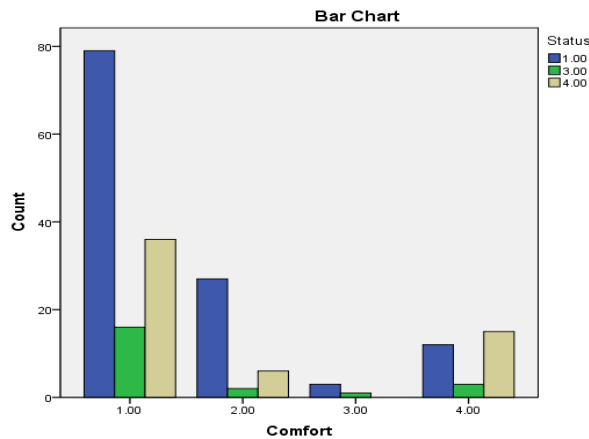


Figure 6 – Distribution of survey results on the convenience of remote litigation

As it is clear from the analysis of the survey results presented in Figure 6, the respondents gave the following answers to the question:

Process side (60.5 %)

1. It was comfortable as the court hearing was simplified, although there were technical problems (39.5 %);
2. It was not comfortable as remote justice could not fully investigate the facts (13.5 %);
3. It was not comfortable as the parties had difficulty maintaining order (1.5 %);
4. It was convenient since all the conditions for a smooth hearing were (6 %).

Judge (11 %)

1. It was comfortable as the court hearing was simplified, although there were technical problems with (8 %);
2. It was not comfortable as remote justice could not fully investigate the facts (1 %);
3. It was not comfortable as the parties had difficulty maintaining order (5 %);
4. It was comfortable since all the conditions for a smooth hearing were (1.5 %).

Other participant in the process (28.5 %)

1. It was comfortable as the court hearing was simplified, although there were technical problems with (18 %);
2. It was not comfortable as remote justice could not fully investigate the facts (3 %);
3. It was not comfortable as the parties had difficulty maintaining order (0 %);
4. It was comfortable since all the conditions for a smooth hearing were (7.5 %).

Finally, the analysis of the first and fourth answers allows us to conclude

that for 80 % of the respondents the remote proceedings are comfortable, although it should be noted that 65 % of the respondents mentioned that they had technical problems during the remote proceedings.

The imbalance of accessibility, equality of parties, ability to communicate confidentially and comfortability, in the existing model of remote court, should be explained by the following circumstances: attending a web conference in a home or office environment is much more comfortable for parties than in a courtroom, it is possible to focus on details, they can make an affidavit in a calm environment.

Determining Public Expectations on Prospects for Introduction of Remote Litigation in the Georgian Judicial System

In order to study the issue of introduction of remote legal proceedings in the Georgian judicial system, the respondents were asked the following question: based on the experience gained, would you like to introduce remedial justice in the judiciary in the future?

The distribution of survey results by age and social status is as follows.

Process side

1. Yes, in full (10 %);
2. Yes, but depending on the nature of the specific procedural actions (42.5 %);
3. No, because the right of a fair trial is violated (4 %);
4. No, because it hinders justice (4 %).

Judge

1. Yes, in full (5 %);
2. Yes, but depending on the nature of the specific procedural actions (9 %);
3. No, because the right of a fair trial is violated (1 %);
4. No, because it hinders justice (5 %).

Other participant in the process

1. Yes, in full (1.5 %);
2. Yes, but depending on the nature of the specific procedural actions (23 %);
3. No, because the right of a fair trial is violated (2.5 %) (from 45 up to 60 years);
4. No, because it hinders justice (1.5 %).

The distribution of the obtained answers according to the age of the respondents is given in Figure 7.

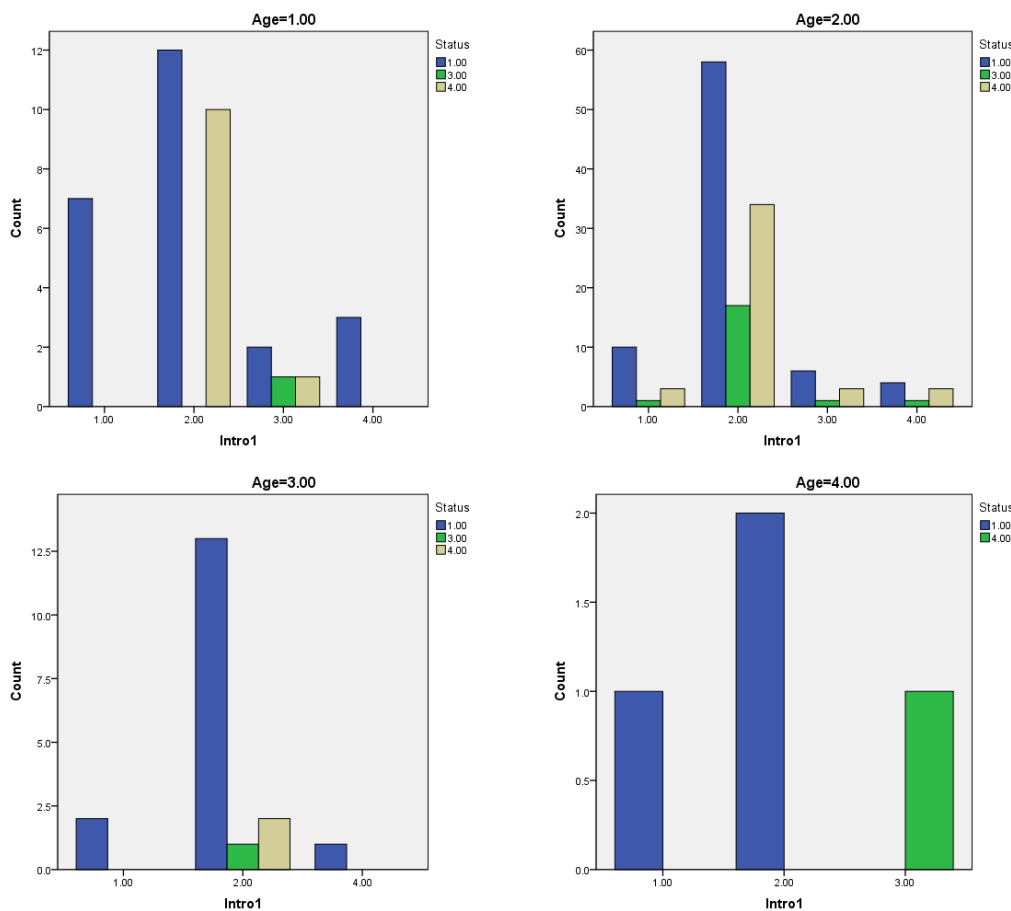


Figure 7 – Distribution of survey results on the prospects of introducing remote legal proceedings in the Georgian judicial system

As can be seen from the graphs of Figure 7, the largest part of the first age group (18-30 years old) agrees with the partial introduction of distance justice. Then, also a significant part of this group agrees with the full introduction of remote justice. The same situation is in all age groups. Taking into account the results of the survey of all age groups, 86.5 % of the respondents expressed a desire to introduce remedial justice in the Georgian judiciary.

Sociological research has shown that there is a difference between public views/expectations regarding the forms of the remote justice system. In particular, 74.5 % of respondents support the introduction of remedial justice given the nature of specific procedural actions.

Conclusion. Based on a critical understanding of the results, we conclude that the principle of distancing in a fair trial may run counter to the principle of obtaining and hearing evidence directly, as the risk of information distortion is high (e.g., interference, blurred images). The risk of bias in the evaluation of the evidence and arguments of the parties in the videoconference

format is very high, which affects the formation of the judge's internal beliefs, and so on.

The results of the investigation confirm the opinion expressed in the scientific literature that the quality of digital litigation is missing in legal reforms, which has a fundamental impact on the legitimacy and results of litigation. This means that we must approach the remote justice system not only in terms of the formation of technical protection mechanisms, but also in terms of the legality of all actions taken in this format, the protection of the rights of the parties and unauthorized access to information.

Due to the multifaceted nature of the problem, the results of the study also determine that the remote form of justice must meet the following requirements: collecting information, its storing and its protecting from modification; compliance with the requirements of conformity, admissibility, reliability and integrity of the information provided by the criminal procedure legislation; ability to examine and evaluate the information provided during the remote hearing of the case.

In turn, due to global trends, from an organizational-technical point of view, the implementation of remote justice is associated with the introduction of "smart court" technology, which implies a close connection between the design, the frame and the ritual elements of the virtual listening (M. Rossner et al., 2021). In this case, we are not talking about "robotizing" the trial, but about the introduction of smart technologies in the remote justice: the adoption of court acts required for a specific plot; elimination of technical contradictions in court practice or the ability of the court to make decisions using artificial intelligence; opportunity for citizens to use e-Justice services (along with court and business orientation); establishment of effective mechanisms for the protection of information related to legal proceedings; establishment of a database of criminal cases and the possibility of sanctioned access to them in electronic format; data protection; dissemination of information outside the professional, legal environment; expanding the capacity of e-litigation, providing education to citizens and more.

Conclusions for judgment. The growing popularity of remedial justice is due to the simplicity of the interface and the use of technology, accessibility, simplicity of legal, administrative, technological procedures. At the same time, the "one-sidedness" of the introduction of technologies exacerbates internal systemic contradictions. The criminal process is quite conservative in nature, the use of new technologies in this area carries some risks. The generalization of the practice has established that the management of these risks should be carried out in the following directions: separate involvement of the lawyer and the defendant (principle of direct participation); involvement of the lawyer and the convict in the court process; involvement of jurors in remote mode and more.

In order to overcome these risks, we consider it appropriate to develop a remote court model taking into account the following elements:

1. In the courts of first instance, there should be a remote justice room, from where the convict and the lawyer will be involved in the video conference (according to the location);

2. The development of the existing automated system of court proceedings in the field of information protection; the improvement of the electronic delivery of documents;

3. In order to ensure an integrated chain of justice, the following should be introduced:

3.1. remote Justice Room;

3.2. “smart search engine” as a way to implement information technology-based justice, through which it will be possible to exchange information electronically; similar software allows us to use artificial intelligence in the process of gathering evidence, analyzing a case, evaluating documents; it eliminates technical deficiencies, involvement of strangers in video conferencing, etc;

3.3. special so-called “Courtroom” Internet platform (Cisco Webex and other online conferencing systems ZOOM, SKYPE), which integrates litigation, staff, data attachments, provides dynamic monitoring in the process of solving court organizational and managerial tasks;

3.4. the so-called Front Offices – for jurors and citizens to master the rules and technical skills of distance justice.

Therefore, providing the public with structural-functional procedures that determine the integrity of the remote justice system includes: integrating the prosecutor’s office and lawyers into automated document management, maintaining confidentiality and professional ethics by professional groups, ensuring the internal faith of the judge, introducing practical and effective mechanisms for the right to a fair trial.

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Conflict of Interest and other Ethics Statements

The author declare no conflict of interest.

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Георгі Свіанадзе

ОЦІНКА ЕФЕКТИВНОСТІ МОДЕЛІ ЕЛЕКТРОННОГО (ДИСТАНЦІЙНОГО) ПРАВОСУДДЯ В ГРУЗІЇ ЩОДО РЕАЛІЗАЦІЇ ПРАВА НА СПРАВЕДЛИВИЙ СУД

Анотація. У статті розглядається ефективність моделі електронного (дистанційного) правосуддя в Грузії. З цією метою досліджено громадську думку з урахуванням переваг та недоліків, а також перспектив дистанційного правосуддя. Незважаючи на “швидкість і дешевину”, ефективність справедливого судового розгляду виявилася низькою: існуюча технологія відеоконференц-зв’язку впливає на об’єктивність оцінки сторонами доказів і аргументів, формування внутрішньої віри судді в процесі ухвалення рішення тощо. Розроблено дискусійну пропозицію щодо нової моделі дистанційного здійснення правосуддя.

Автор наголошує, що зростання популярності дистанційного правосуддя пояснюється простотою інтерфейсу та використанням технологій, доступністю, простотою правових, адміністративних, технологічних процедур. Водночас “однобічність” впровадження технологій загострює внутрішні системні протиріччя. Враховуючи, що кримінальний процес носить досить консервативний характер, використання нових технологій у цій сфері несе певні ризики. В статті встановлено, що управління цими ризиками має здійснюватися за такими напрямками: окреме залучення адвоката та відповідача (принцип безпосередньої участі); залучення адвоката та засудженого до судового процесу; залучення присяжних у дистанційному режимі тощо.

Для подолання цих ризиків автор вважає за доцільне розробити модель дистанційного суду з урахуванням наступних елементів: у судах першої інстанції має бути віддалена кімната правосуддя, звідки засуджений та адвокат будуть залучатися до відеоконференції (за місцем розташування); розвиток існуючої автоматизованої системи судочинства у сфері захисту інформації; удосконалення електронної доставки документів.

При цьому для забезпечення цілісного ланцюга правосуддя необхідно запровадити: віддалену кімнату юстиції; “розумну пошукову систему” як засіб реалізації правосуддя на основі інформаційних технологій; спеціальну так звану Інтернет-платформу “Courtroom”, яка об’єднує судові процеси; так звані Front Offices – для присяжних і громадян для оволодіння правилами та технічними навичками дистанційного правосуддя.

Ключові слова: модель дистанційного правосуддя, оцінка ефективності моделі, громадська думка, теорія права, теорія управління, прийняття рішень

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