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A MODEL-THEORETICAL ANALYSIS FOR DIGITAL TAX ADMINISTRATIONS

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ABSTRACT

Fairness in the sense of tax equality is a fundamental principle in modern tax systems. In recent years tax ad-minis trations have been making tremendous advances in moving from paper tax returns to a far-reaching digitalisation of the taxation procedure. This paper represents the first attempt to examine the impact of digitalisation of the tax administration on fair taxation through model theory. The model suggested in this paper is based on Allingham and Sandmo's tax evasion model (Allingham & Sandmo, 1972, 323–338) supplemented by psychological costs of tax evasion and compliance costs and then transferred to the context of digitalisation and fair taxation. The model is intended to mathematically derive the influence of various digitalisation measures on the taxpayer's decision to behave fairly. It implies that the objective of fair taxation should be promoted with a mix of deterrent and encouraging measures.

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Introduction.

Digitalisation might enable private individuals to quickly and easily move assets abroad - without the tax authorities necessarily knowing about the related income. The situation is similar for companies. Thanks to creative accounting, they can shift their profits to tax-efficient foreign countries where little or no economic activity is performed. That is why digitalisation is frequently perceived as a catalyst for increasingly unfair tax systems.

Indeed, the emergence of the digital economy confronts tax administrations with various obstacles to keep up with. This is because fairness in the sense of tax equality is a fundamental principle in modern tax systems, which needs to be protected for a variety of reasons: Beyond the distributional impacts and ethical implications, unfair tax systems increase income inequality and may lower economic growth (Stiglitz, 2014, 389, 393).

Solid economic development, therefore, requires a fair tax policy. Against this background, tax legislation and tax authorities are faced with the challenge of designing the legal and administrative framework so that the tax burden is distributed fairly. In that sense, fair taxation depends on tax legislation as well as on tax enforcement.

The focus of this paper is on the contribution that tax authorities can make to fair taxation.

The tax administration is responsible for the correct assessment and collection of taxes. In a mass procedure, and given limited resources, it is intended to realise equality and legality principles. Therefore tax administrations that are capable of enforcing these principles are needed.

Digitalisation does not only have the potential to revolutionise businesses; instead, tax administrations as well might take advantage of this transforming environment. Facing the challenge of building strong tax administrations that are competent to tax digital business in a just and sustainable way, it is essential to consider how digitalisation might prove beneficial.

Objective and Research Question.

Accordingly, the subject matter of the research is the digitalisation of the tax administrations.

Aiming to contribute to this debate, this paper represents the first attempt to examine the impact of digitalisation of the tax administration on the objective of fair taxation through model theory - more precisely from the perspective of agency theory. The underlying assumption is that the asymmetric distribution of information between the taxpayer and the authority may result in the tax administration being unable to determine the tax bases correctly - jeopardising fair taxation. In this context, tax administrations' digitalisation is perceived as a device to mitigate asymmetric information problems.

Based on the subject matter defined, the research question is: “Can digitalisation of the tax administrations contribute to fair taxation?”

It is intended to design a mathematical model from which implications can be derived to answer this research question.

This model's primary considerations were summarised with the following abstract: "An Economic Model of Fair Taxation in the Digital Age" (Krieger, 2020, pp. 93–95) and briefly presented at the 24th European Scientific Conference of Doctoral Students PEFNet 2020.

It is essential mentioning that here, fair taxation is defined as legally compliant taxation. This means that, for the following study, it is assumed that the material tax law in itself has created all the conditions for fair taxation, provided that the administration manages to enforce these legal principles. Therefore, it can be concluded that measures that help prevent tax evasion also serve the purpose of fair taxation. Conversely, fair taxation is the absence of tax evasion.

First, the literature analysis results will be summarized to highlight the research gap and indicate the starting point. Subsequently, specific digitalisation measures that have been undertaken so far by OECD’s tax administrations will be outlined. Having completed this introduction chapter, the remainder of the paper is organised as follows: Section 2 introduces the key aspects of agency theory in the context of the (digital) taxation procedure. In advance of setting out a fair taxation model, the relevant results of the Allingham and Sandmo (1972) model will be summarized. Afterwards, those will be adapted to the context of digitalisation, and fair taxation and two further extensions will be introduced. Section 3 then examines the model-theoretical effects of various digitalisation measures on the objective of fair taxation and offers these for discussion. Section 4 draws some conclusions.

Results of Literature Survey.

Digitalisation is a trend that has been shaping our societies at the latest since the beginning of this millennium at an ever-increasing speed. In contrast, science has dealt with tax evasion in theoretical and empirical form for over 50 years.

Seeking a solid starting point to answer the research question, the beginning was to bring these two research areas together. By surveying the existing literature on tax compliance in the context of digitalisation, concepts and research streams regarding the theory of tax evasion on the one hand and the topic of digital tax administrations on the other were identified.

The analysis has shown that the starting point of the formal economic theory of tax evasion can be traced back to 1972, when Allingham and Sandmo published their work "Income Tax Evasion: A Theoretical Analysis" (Sandmo, 2005, p. 643). Since then, it has been subjected to widespread development and especially after the start of the new millennium, behavioural economics concepts have gradually supplemented this research field. An example is McCaffery and Slemrod’s work from 2004, “Toward an Agenda for Behavioural Public Finance”, where they discourse the subject of tax evasion in the context of behavioural public finance (McCaffery & Slemrod, 2004, pp. 1–28). Sandmo also points that there are other aspects besides deterrence effects that promote tax compliance: *“[…] people refrain from tax evasion […] not only from their estimates of the expected penalty, but for reasons that have to do with social and moral considerations"* (Sandmo, 2005, 649–650).

In 2008 Kirchler et al. presented the “slippery slope” framework. The novelty of their approach is that they argue that compliance can be achieved not only through traditional deterrence factors such as audit probabilities and fine rates but that equally, a relationship of trust between the taxpayer and the administration plays an essential role in this game (Kirchler et al., 2008, pp. 210–225).

Largely uncoupled from this, research has been developing in the field of digitalisation of the tax administrations. The latter is a much younger field of research. This also shows the dominance of published reports and project reviews in contrast to classical journal articles. Gathering comparative information concerning digitalisation of the taxation procedure among OECD’s administrations, one

does not get past the Tax Administration Series (TAS) (OECD, 2019, p. 3) covering data of 58 advanced and emerging economies. These data are crucial for the description of digitalisation measures put in place in different countries.

The literature research followed that there is no publication of a theoretical nature that systematically deals with the influence of the tax administration's digitalisation on fair taxation. In this regard, the intended contribution addresses a "white spot" that has not been explored yet.

Digitalisation of tax administrations.

As well as companies, tax administrations are required to manage more complex tasks faster, with fewer staff and smaller budgets. Removing human interaction and leveraging automation might be the solution. Growing volumes of data afford the chance to enable tax administrations to allocate the limited financial and human resources to the most severe tax offences (Ernst and Young Global, 2019).

Consequently, the digitalisation of the economy is being mirrored by tax administrations' work in digitalising their tax systems.

Tax authorities have been making immense advances in their use of technology: Ernst and Young summarise that the tax authorities have managed to change their processes and, in many cases, have moved from paper tax returns to taxpayers submitting their returns electronically. This will also allow for the electronic reconciliation of tax returns. Besides, the routines are developing towards electronic accounting, which consequently also permits electronic auditing (Bertolino, 2017, p. 10).

The first attempts to meet these tax challenges can be traced back to the Base Erosion and Profit Shifting (BEPS) Action Plan of 2013. Aiming at sharing information that will facilitate dialogue among tax administrations, the OECD Centre for Tax Policy and Administration regularly publishes comparative information series on aspects of tax systems:

The Tax Administration Series (TAS) is intended to assist tax authorities in considering where further improvements might be made. The 2019 edition of the TAS is based on the International Survey of Revenue Administrations (ISORA) conducted in 2016 and 2017, and the examples received from tax administrations. It covers comparative data of 58 advanced and emerging economies. Those economies include the members of the OECD's Forum on Tax Administration (FTA) and those that are not part of the FTA but are nonetheless states of the E.U. non-FTA jurisdictions that members of the European Union (OECD, 2019, p. 25).

In the following, a review of facts related to the working title will be provided. Even though the individual countries' tax authorities have very different structures, specific key points are repeated in individual countries' digitalisation concepts.

The TAS survey reveals that e-administration has been significantly strengthened and that there are increasing facilities for e-filing. For example, the rates for personal income tax returns being filed online was around 73,50 % in 2017. Average e-filing rates for corporate income tax were 85,30 % and for value-added tax even 89 %. There is an increasing number of tax authorities that have already reached 100 % e-filing rates (OECD, 2019, p. 80).

The usage of third party data is another key trend: Since more and more data has been stored electronically, and the transfer, storage and integration of data has become more accessible, the tax authorities have an enormous amount of third party data available for compliance purposes (OECD, 2019, p. 47). These sources include data from other government agencies, employers, banks and financial service providers, suppliers, customers, international partners (Common Reporting Standard and Country by Country Reporting), and some more. (OECD, 2019, p. 48).

This available data can be used in different ways in the taxation process. The purpose of the use is to provide third party data for pre-filled returns: 40 of the 58 jurisdictions surveyed reported using pre-filled returns (OECD, 2019, p. 83).

Another area that benefits from large volumes of data is the use of automated risk management systems: A growing number of tax administrations pursue automated risk management strategies: These "robotic" activities replace some audit actions previously performed by people. They use rules-based approaches to treat defined risks. In so doing, data populations can be reviewed automatically, and primary verification or matching action can be performed more effectively and efficiently than via traditional "desk-based verification review". Thus costs per audit can be reduced substantially (OECD, 2019, p. 57).

The support of positive compliance attitudes is increasingly considered essential in the context of current efforts by tax administrations to manage compliance. To develop a deeper understanding of

the motives underlying taxpayers' actions, behavioural insights, and analytics can be used. These insights can be applied to design practical policies and interventions (OECD, 2019, p. 22).

Tax administrations are ever more employing behavioural researchers and data scientists. More than ten respectively more than 35 tax administrations have added to their workforce in this field. Since the tax environment is becoming more focused on using data, computer system analysts' growing employment meets demand. (OECD, 2019, p. 134) This staffing allows the tax authorities to apply smarter techniques, especially in compliance risk management.

More sophisticated analytical techniques, which can be applied to an ever-increasing amount of data, allow for a very accurate risk assessment, including predictions of taxpayer's behaviour (OECD, 2019, p. 50).

The information gained from these techniques opens up a whole new range of possibilities for bringing taxpayers into compliance. In this way, conventional enforcement methods that penalise noncompliance are coupled with tools and services to encourage voluntary compliance (OECD, 2019, p. 184).

The above suggests that there are three main categories into which digitalisation activities can be grouped and that the interconnection among them is promising in terms of positively influencing taxpayers' behaviour. These categories are (1) data & analytics, (2) digital services and administration, and (3) behavioural insights and design. (OECD, 2019, p. 191)

Methods.

Before studying how digitalisation affects fair taxation, one should be aware of the following: Fairness can only arise if the tax assessment process is designed so that taxpayers are behaving fairly. This means that the tax authority seeks to design norms that will induce the taxpayer to conduct as fairly as possible.

The behaviour of actors in institutions and the possibilities of controlling is the subject of agency theory, which will be briefly presented here in context.

Digitalisation as a device to mitigate agency problems.

The fundamental problem of agency relationships is the existence of an information asymmetry between the Principal and the Agent and the opportunistic exploitation of this asymmetry to the Agent's advantage and thus simultaneously to the Principal's disadvantage (Spremann, 1989, pp. 6–7).

The core of agency theory is transferring a task from a poorly informed principal to a better-informed agent. In determining the tax base, the tax officials are reliant on the cooperation of the taxpayers. This is because only the taxpayer himself has full knowledge of whether specific facts which give rise to a tax liability have been realised in his life. The transfer of tasks in the taxation process is based on legal principles.

Hence there is an information gap between the taxpayer and the tax authorities. Here, this constellation shall be described as a problem of agency theory. The agent represents the taxpayer and the principal is the tax administration. It shall be assumed that the tax assessment process is characterised by information asymmetries and a conflict of interest, which can lead to the better-informed Agent exploiting his information advantage at the Principal's expense.

In terms of agency theory, the above problem is a moral hazard (Holmström, 1979, p. 74). Measures to combat moral hazard could be the direct reduction of information asymmetry or the resolution of conflicting objectives - and recent contributions have increasingly focused on the building of trust between Agent and Principal as a further measure (Pauls, 2013, 101).

In order to make up the results of the Tax Administration Series (OECD, 2019, p. 25) 2019 usable for an agency theoretical consideration, the digitalisation categories shall be assigned to instruments from theory: Data and analytics can be instruments to reduce information asymmetry directly, digital services and administration can resolve conflicting objectives, while behavioural insights and design can be used to build trust.

This means the digitalisation measures will be regarded from an agency theoretical point of view as a bundle of instruments to reduce the agency problem.

To transfer these three areas into a model, the publication "Income tax evasion: A theoretical analysis" (Allingham & Sandmo, 1972, pp. 323–338) is used as a starting point and is transferred to the context of digitalisation and fair taxation.

A basic model of tax evasion.

In advance of setting out the fair taxation model, it seems worthwhile to first summarise the most important results of the AS (Allingham & Sandmo) model and then adapting those to the context of digitalisation and fair taxation.

The formulated aim of that publication was to analyse the individual taxpayer's decision on whether and to what extent it would be of benefit to avoid taxes by underreporting (Allingham & Sandmo, 1972, p. 323).

The AS model, as outlined by Sandmo (2005, 643–663), assumes the actual income, *W*, as given. Beyond it is assumed that the tax rate θ and the penalty rate λ, applied to evaded income, are predetermined. The taxpayer's advantage depends on the probability p of the criminal offence being discovered (Allingham & Sandmo, 1972, p. 324). A widely acknowledged modification of the AS model comes from Yitzhaki (Yitzhaki, 1974, pp. 201–202): He argued that in the United States and Israel, the penalty for tax evasion is proportional to the evaded tax $\theta(W - X)$. Hence he suggested that λ should be replaced with $\pi\theta$, where $\pi > 1$. Here the model development will be based on the AS model in the form adapted by Yitzhaki.

Thus the AS model suggests that tax evasion is a risky activity: With probability p, the taxpayer's attempt to evade is discovered, resulting in net income, $Z = W - \theta X - \pi\theta(W - X)$. With probability $1 - p$, the taxpayer is lucky not being detected (hence net income, $Y = W - \theta X$). Under these circumstances, the taxpayer aims to maximise net income, the only argument of his von Neumann-Morgenstern utility function. He will choose the declared income $X \leq W$ in such a manner that the expected utility *U(X)*, from income based on the two alternatives, is optimised.

For the Agent to be worse off if the tax evasion is discovered than in the case where he has declared all his income from the very beginning, it must be assumed that $\pi > 1$.

AS demonstrate that an interior solution can be derived from the first-order conditions.

Modelling digitalisation and fair taxation.

Based on exponential utility functions with constant absolute risk aversion within the frame of a LEN model, in the following, it will be stuck to the assumption of the maximising utility agent.

In the basic model above, the exogenous variables were θ, π and p whereas the declared income X^* represents the endogenous variable. To clarify the properties of the model in the context of the underlying research question of this paper, the endogenous and exogenous variables are to be reinterpreted and supplemented:

Fairness as endogenous variable *X.**

Since the term fairness is equated with legally compliant behaviour within this paper's scope, the digitalisation measure aims to persuade the taxpayer to disclose his actual income. Therefore, the degree of fairness is determined by how much the declared income is compared to the actual income. Since an exogenous given actual income W is assumed fairness in this model can be correlated directly with X^*. The higher X^*, the fairer the Agent behaves. Thus X is the endogenous variable in this transfer of the model as well.

Probability of detection p and penalty rate π as exogenous variables.

The exogenous variables are intended to influence the taxpayer's behaviour and thus determine the level of fairness. Here it is first of all essential to consider which variables influence the taxpayer's behaviour.

The underlying question of the paper aims to address the actions of the tax administration. Therefore, legislative issues, such as the tax rate, do not belong in the analysis' scope.

Thus, of the three exogenous parameters from the basic model, only the probability of detection p and the penalty rate π remain to be varied in the fair taxation model.

According to Allingham and Sandmo, the deterrent effects of the probability of detection and the penalty tax are due to the concept that those reduce net income if detected. This results from the assumption that the utility function comprises net income (*Y* or *Z*) as the only argument. Meaning the Agent's utility is decreased by tax payments.

Although the AS model is still considered today as the standard against which all later developments are judged in the theory of tax evasion, it was and is subject to ongoing criticism. This

results from the fact that it is hard to reconcile with the high rate of tax compliance experienced: The "taxpayer's puzzle" - why, despite the low risk, many citizens pay taxes honestly - cannot be solved with the help of the standard model, according to which the evasion rate should be significantly higher (Forschungsstelle für empirische Sozialöknomik e.V., 2014, p. 21).

Psychological costs of tax evasion as exogenous variable σ.

Here, it might be worthwhile to draw on the findings of behavioural economics. It should be noted that the authors Allingham and Sandmo themselves point out that their theory is not sufficiently paying attention to non-pecuniary factors in the taxpayer's decision (Allingham & Sandmo, 1972, p. 326).

Gordon presents an approach with ethical and social norms supporting tax compliance regarding fixed stigma costs on evasion. Meaning stigma costs are exogenous to the analysis based on the assumption that evasion generates psychic costs irrespective of whether the incompliant behaviour is observed. For example, noncompliance may induce anxiety, guilt or a reduction in self-image. (Gordon, 1989, p. 798)

For the underlying research question, the latter psychic cost interpretation will be adopted and used to extend the basic tax evasion model: It will be assumed that the psychic costs are a linear function of the proportion of the tax evaded. This formulation captures the idea that the taxpayer feels more anxiety or guilt, the less compliant he behaves.

Compliance costs as exogenous variable α.

The preparation of a tax return is associated with a utility loss for the taxpayer. This results from the effort required to compile the necessary documents and to acquire the essential know-how. The more accurate the Agent prepares his tax return, the higher the effort and the associated utility loss. This means that the less the tax levied differs from that which should be levied, the higher the compliance costs.

These costs will therefore be presented as a proportional function of the tax due on the income reported.

Summary and utility functions.

The figure below summarises the procedure described above

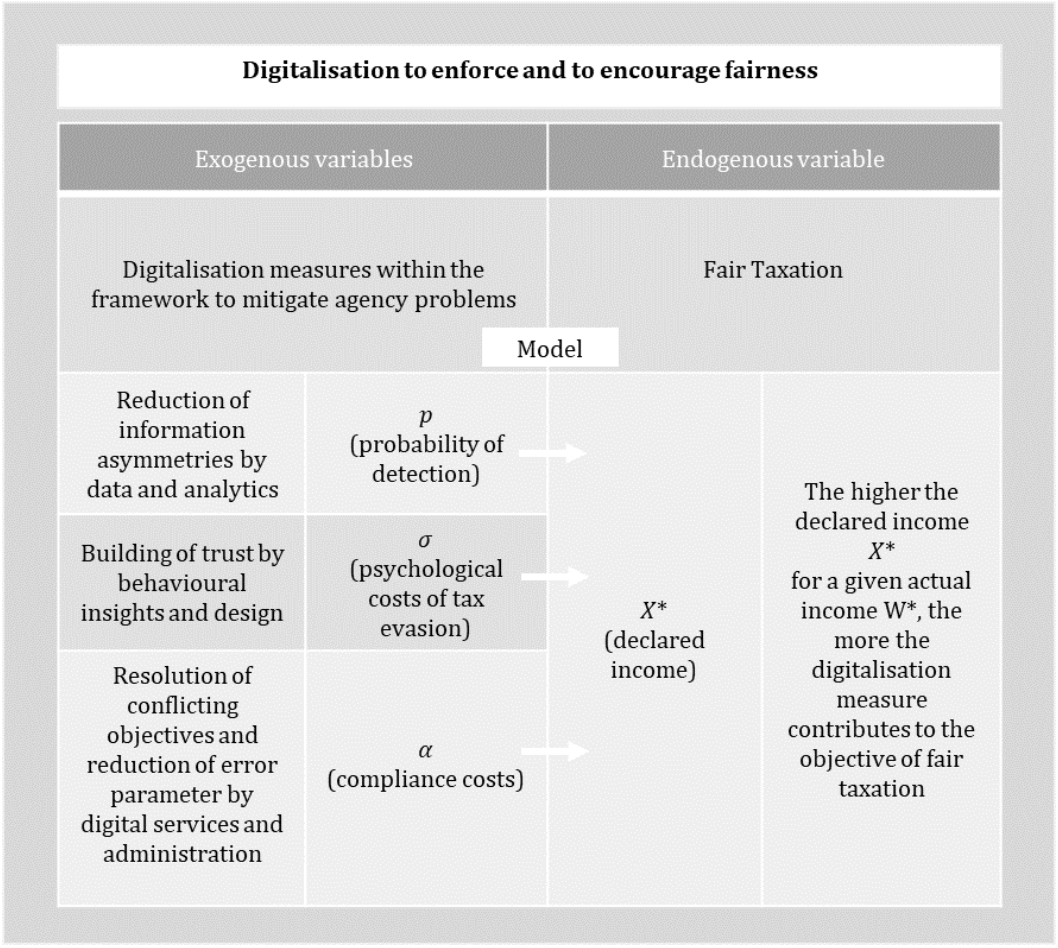

Fig. 1. Digitalisation to enforce and to encourage fairness

A linear production function, which maps the fairness result F as a function of the taxpayer's fairness intention $X^*$and an error component ε will be applied.

$$F = X^* - \varepsilon \tag{1}$$

In order to analyse the effect on the behaviour of the Agent, the expected utility function is supplemented by the components discussed above: psychological costs of tax evasion B and compliance costs C (independent of the probability of detection):

$$E[U] = (1-p)U(Y) + pU(Z) - U(B) - U(C) \tag{2}$$

Following the AS model, a concave exponential utility function in the form $U(N) = b - e^{-ax}$, where a is the Arrow Pratt measure for risk aversion, is assumed for the first two summands. As described above, linear utility functions are assumed for the two rear summands: $U(B) = \sigma\theta(W-X)$, $U'(B) = \theta\sigma$ and $U(C) = \alpha\theta X$, $U'(C) = \theta\alpha$.

The expected utility for the Agent is thus composed of the expected net income, depending on the probability of detection less the psychological costs and the costs of compliance, which in turn depend only on the amount of tax evaded:

$$E[U] = (1-p)U(W-\theta X) + pU[W-\theta X-\pi\theta(W-X)] - U[\sigma\theta(W-X)] - U(\alpha\theta X) \tag{3}$$

Under the above assumptions, a rational taxpayer will evade taxes for as long as he can increase his expected utility. *"This would be the case if the potential gain (in expected utility terms) from underreporting exceeds the potential loss (in expected utility terms)"* (Yaniv, 2009, 215).

The derivative of the above function leads to the following first-order condition for utility maximisation:

$$\frac{dEU}{dX} = \theta\left[-(1-p)U'(W-\theta X) + (\pi-1)pU'\left(W-\theta X-\pi\theta(W-X)\right) + \sigma - \alpha\right] = 0 \tag{4}$$

In analogy to the AS model (Allingham & Sandmo, 1972, pp. 325–326), it will be investigated which values for the exogenous parameters are needed for an interior solution, and therefore expected utility is evaluated at $X = 0$ and $X = W$.

Underreporting will be favourable as long as reducing X below W increases *A's* expected utility. In order to find the precondition for underreporting, which is often referred to as entry condition into tax evasion (Yaniv, 2009, p. 215), the procedure is as follows: Since expected marginal utility is decreasing with X, mathematically, underreporting is desirable if at $X=W$:

$$\left.\frac{dEU}{dX}\right|_{X=W} = -(1-p)U'[W(1-\theta)] + (\pi-1)pU'[W(1-\theta)] + \sigma - \alpha < 0 \tag{5}$$

$$\left.\frac{dEU}{dX}\right|_{X=W} = p\pi + \frac{\sigma}{U'[W(1-\theta)]} - \frac{\alpha}{U'[W(1-\theta)]} < 1 \tag{6}$$

Theoretically, even when the taxpayer evades his entire income, it might still be possible that the expected marginal utility gain would be higher than the expected marginal utility loss. Then it would be optimal for *A* to report his income $X=0$ (Yaniv, 2009, p. 222).

Here, it is assumed that this is not the case. Therefore it can be stipulated that:

$$\left.\frac{dEU}{dX}\right|_{X=0} = -(1-p)U'(W) + (\pi-1)pU'[W(1-\pi\theta)] + \sigma - \alpha > 0 \tag{7}$$

This condition can be rewritten as:

$$\frac{U'(W)}{U'[W(1-\pi\theta)]} - \frac{\sigma}{(1-p)U'[W(1-\pi\theta)]} + \frac{\alpha}{(1-p)U'[W(1-\pi\theta)]} < \frac{p(\pi-1)}{1-p} \quad (8)$$

The two conditions (6) and (8) specify a set of positive values for the exogenous parameters that ensure an interior solution to the Agent's problem $(0 < X^* < W)$.

Seeking the optimal solution to *A's o*ptimisation problem, the first-order condition is arranged to obtain:

$$\frac{dEU}{dX} = \theta[-(1-p)U'(Y) + (\pi-1)pU'(Z) + \sigma - \alpha] = 0 \quad (9)$$

$$\frac{U'(Y)}{U'(Z)} - \frac{\sigma}{(1-p)U'(Z)} + \frac{\alpha}{(1-p)U'(Z)} = \frac{(\pi-1)p}{(1-p)} \quad (10)$$

For notational convenience, the terms from the above equation will be designated as follows:

$$\underset{\boxed{D}}{\frac{U'(Y)}{U'(Z)}} - \underset{\boxed{B}}{\frac{\sigma}{(1-p)U'(Z)}} + \underset{\boxed{C}}{\frac{\alpha}{(1-p)U'(Z)}} = \underset{\boxed{H}}{\frac{(\pi-1)p}{(1-p)}} \quad (11)$$

Results and discussion.

Graphical illustration.

To facilitate understanding, Yaniv has graphically depicted the AS model's equilibrium situation (Yaniv, 2009, pp. 216–218). This idea will be adopted an modified according to the situation underlying this paper (11). Based on this, the implications derived from the model for the research question addressed will be presented.

On the X-axis, the endogenous variable fairness is visualised. On the Y-axis, the left part of equation (11) is shown.

$\boxed{H}$ represents the price ratio between undeclared and declared income. An increase in this ratio leads to tax evasion becoming more expensive compared to compliant behaviour. The higher this ratio is, the more the taxpayer is induced to replace undeclared income with declared income and behave more fairly. $\boxed{H}$ is a constant term, depending only on the exogenous π and p. Being independent of the Agent's decision about *X* a line parallel to the x-axis can graphically depict it. Yaniv represents this ratio in reverse (Yaniv, 2009, p. 216).

$\boxed{D}$ represents the marginal utility ratio, which is linked to the amount of income reported, *X*. Since *U'(Z)* decreases when *X* rises whereas *U'(Y)* increases the marginal utility ratio can be represented as an upward sloping curve. Yaniv represents this ratio in reverse as a downward sloping curve and refers to it as the demand curve for tax compliance. The tax demand curve shows for any marginal utility ratio the amount of declared income that the taxpayer seeks. The higher the relative price, the lower the desired level of compliance (Yaniv, 2009, pp. 217–218). The marginal utility ratio $U'(Y)/U'(Z)$ shown here shall be called the demand curve for tax evasion. The higher the relative price, the higher the level of fairness. At the intersection of the two graphs D and H the first-order condition is fulfilled. At this point, there is X_D^*, which is the taxpayer's optimal, i.e. utility-maximising, declared income.

The tax demand curve shows for any marginal utility ratio the amount of declared income that the taxpayer seeks.

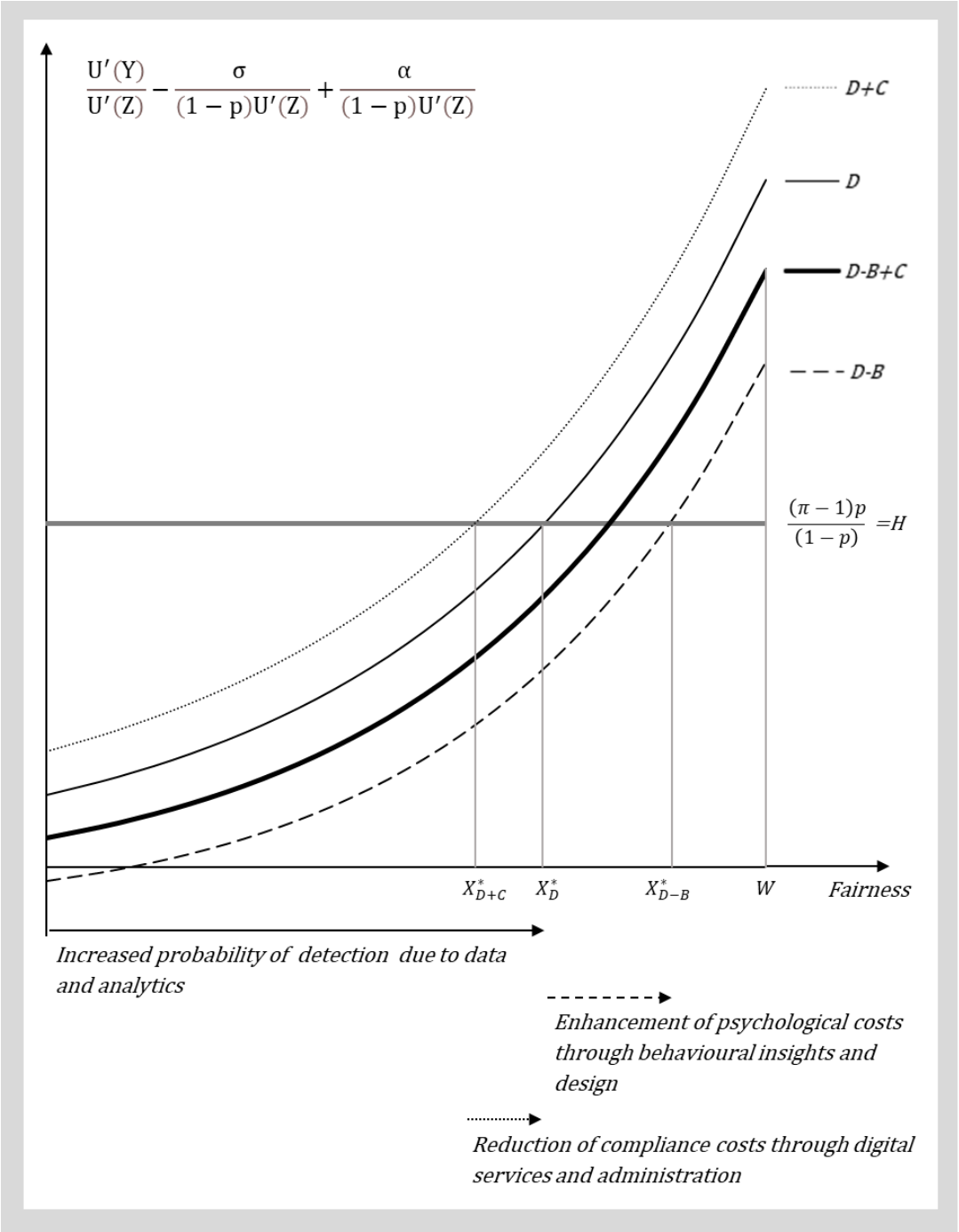

Fig. 2. The impact of digitalisation measures on the taxpayer's optimal choice of fairness[1]
(Source: This is an illustration developed by the author. The idea of graphically representing and explaining the model equilibrium - in a different context, with regard to the AS model - comes from Yaniv (Yaniv, 2009, 216–218).)

Graphically, one can see that measures that push the horizontal line *H* upwards while the upward sloping curve position does not change, lead to the fact that it makes sense for the Agent to increase his declared income compared to his actual income. Such measures would, therefore, ceteris paribus, lead to an increase in fairness and vice versa.

D shows the marginal utility ratio based on utility functions, in which the expected net income is the only argument. At the intersection of *D* and *H* is the optimal compliance decision for the Agent under

[1] This presentation is based on the following values for the exogenous parameters:
$p = 0{,}5;\ \pi = 1{,}5;\ \sigma = 0{,}002;\ \alpha = 0{,}001;\ a = 0{,}5;\ b = 1.$

these circumstances. Applied to the topic of digitalisation, X_D^* is the degree of fairness that can be achieved if psychological costs and costs of compliance are left out of consideration. Within this paper's framework, it is the measures assigned to the category data and analytics, which primarily serve to increase the probability of detection. For example, this could be the effect of an automatic risk management system using rules-based approaches to treat defined risks and replace some audit actions or steps previously performed by people. Since one is looking at the economic calculation of the Agent here, the probability of detection subjectively perceived by the taxpayer is the crucial factor. Indeed, taxpayers seem to overestimate the probability of detection (Borck, 2001, p. 407). Actions of this category are classic enforcement measures that are now more cost-effective due to digitalisation possibilities. From the point of view of the new institutional economics, here, digitalisation reduces transaction costs.

$D - B$ is the marginal utility ratio based on utility functions, including psychological costs of tax evasion. The positioning of X_{D-B}^* shows that the taxpayer's optimal choice is located further to the righthand side when considering psychological effects. This means that the same deterrence effects result in greater fairness. If Digitalisation measures succeed in increasing the psychological costs, this leads ceteris paribus to an increase in compliance. Transferred to the tax administration's digitalisation portfolio, data and analytics and behavioural insights and design represent complementary measures concerning the objective of fair taxation. The distance X_D^* to X_{D-B}^* can, therefore, be described as voluntary tax compliance.

Above, equation (6) has been described as an entry condition to tax evasion. The equation shows that for the basic case, i.e. without considering psychological costs and compliance costs, the product of the probability of detection and penalty tax rate must be less than 1 in order for tax evasion to be of any benefit. The inclusion of psychological costs makes this condition more stringent. In the figure, this is shown on the far right side when $X \xrightarrow{yields} W$: $D - B$ is below D. This means that an intersection between H and $D - B$ can only be achieved with lower values for p and π compared to the basic case.

Conversely, the same applies to the edge solution, which is represented by (7). The issue here is how low the deterrence factors, i.e. H have to be for the taxpayer to evade his entire income. This can be seen in the illustration on the far left, where $D - B$ is also below D. In other words, the intersection of H and $D - B$ when $X \xrightarrow{yields} 0$ would, in principle, be realised at a higher H than if psychological costs were taken into account. Due to the underlying parameter assumptions, one can conclude that the Agent would not even cheat if $H = 0$, meaning even if there were no deterrence effects at all. The assumption of psychological costs alone, therefore, leads to a certain degree of compliance (intersection with $D - B$ with x-axis).

The model thus implies that it would be helpful to influence the taxpayer in such a way as to increase his psychological costs in the event of evasion. This could be achieved, for example, by the authorities acting in a unique partnership with the taxpayer, thus creating a bond that makes it morally more difficult for the taxpayer to evade. Digitalisation can help filter risks individually and address these “endangered taxpayers" in a distinct way. Once again, the point here is that digitalisation reduces the transaction costs associated with these measures and makes wide-ranging application possible.

The $D + C$ curve displays the marginal utility ratio taking into account compliance costs. The comparison with D shows that the optimal degree of fairness for the taxpayer decreases when compliance costs are brought into play - initially excluding the effect of psychological costs. The above considerations on the marginal utility ratio about edge solutions can be applied analogously (in the opposite direction).

To achieve greater fairness through digitalisation measures, one element is, therefore, to reduce compliance costs. A corresponding improvement could achieve this within the category of digital services and administration. Pre-filled tax returns, for example, can make a significant contribution here. If the declaration already contains correct data, it is the least stressful way for the Agent to accept it. Functions can achieve the same in the tax return software that assists the taxpayer in preparing the return. To summarise, filing a correct tax return must be the most straightforward and most intuitive solution for the Agent.

Equation (11) implies that the more fairness we already have, the higher the influence of psychological and compliance costs on the optimal level of fairness (*U’(Z)* decreases with *X*). The

probability of detection seems to be a supporting factor here as well (reason: the higher X is, the higher B and C are). This could be interpreted to indicate that digitalisation measures belonging to the categories behavioural insights and design or services and administration are primarily intended to optimise the degree of fairness. At the same time, however, this also means that to achieve a minimum level of fairness, it makes sense to invest in classic deterrence measures increasing the probability of detection, e.g. data and analytics.

Finally, the $D - B + C$ curve shows the marginal utility ratio based on the complete first-order condition. This means that psychological and compliance costs are included here.

Thus, the model implies that measures from the three categories complement each other in their effects - indeed, even promote them. At the same time, however, they are interchangeable to a certain extent. This means that a different combination of measures can achieve a particular compliance objective.

Discussion.

In reality, measures of the specific digitalisation categories are not entirely interchangeable.

Here it is still necessary to define specific corridors in which the exogenous parameters can move and are compatible with reality. Possible restrictions result, for example, from the limits of digitalisation software, a specific budget, transaction costs and also legal constraints. Reasonable values for the exogenous parameter p might be obtained by investigating taxation systems with regard to audit probabilities. However, this is made all the more difficult because the subjective probability of detection is decisive here, which varies not only with different tax systems but also across taxpayers.

It is also crucial to gain a more precise understanding of the potential of the measures of behavioural insights and design to adopt appropriate values for σ. The effects of the behavioural category of measures will be all the more robust, the more elastic the taxpayer's decision is to have good contact with the tax authority - in other words, it depends on the basic moral setting of the individual taxpayer. Here economic-psychological surveys - presumably in the form of experiments might contribute.

The effect of the category digital services and administration seems to be the higher, the more complicated and confusing the tax laws appear to the citizen. Approximations for α could, for example, be derived from statistics that measure how many hours per year on average taxpayers in a particular tax system need to fulfil their tax obligations.

Conclusions.

On the basis of this model, the influence of various digitalisation measures in the form of the above mentioned exogenous parameters on the taxpayer's decision could be derived mathematically. The model implies that the digitalisation measures from the three categories described above promote compliant behaviour to complement one another. It also shows that the objective of fair taxation should be promoted with a mix of deterrent and encouraging measures. Once the impact of one category is exhausted, measures in another category can be increased. In this way, the disadvantages of a relatively strong deterrent strategy can be avoided. At the same time, it supports the empirical evidence that many citizens pay taxes honestly despite the low risk of detection (Forschungsstelle für empirische Sozialöknomik e.V., 2014, p. 21). These trend statements were checked employing variation calculations by determining the degree of fairness that would maximise the taxpayer's utility, i.e. be the optimum, depending on the exogenous variables' various specifications.

The value in practice could be that the first step is often the need to decide on measures to improve the status quo. This requires an economic understanding of how the intended measures might impact and what restrictions are imposed. In that way, the model may support practitioners, namely politicians and decision-makers in the tax administration, to predict taxpayers' likely responses to digitalisation efforts.

While the previous research was dedicated to theory development an issue for further research is to reveal whether the implications derived from the theoretical model are relevant in practice. One approach could be first to verbalise the mathematical implications. Based on this, the model implications could be operationalised concerning suitable longitudinal and horizontal data. Subsequently, statistical methods can be employed to empirically test whether there are indications for statistically significant correlations between the degree of digitalisation (if possible concerning specific digital measures) and the extent of fair taxation.

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VENTURE CAPITAL FINANCING: PARTICULARITIES AND OPPORTUNITIES

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ABSTRACT

Venture capital is a way of financing generally used to support companies and small business enterprises and innovative enterprises. It is becoming a very popular source of capital for new companies or enterprises that do not have access to capital markets, bank loans or other credit instruments. Venture capital provides financing during the various stages of the company's life cycle. For the small and medium sector, venture capital financing is one of the most accessible and efficient.

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Introduction. In recent years, venture capital financing is one of the well-known modern ways of financing, especially in the USA and the European countries, for the financing of small and middle innovative enterprises. This modern way of financing small business has its origins in the United States of America (USA) from about the 50-s of the XX-th century after what it gained popularity and spread to European countries as well.

The term "venture capital" means the financing that investors give to start-ups and to small innovative businesses, which that represents a long-term success potential. The source of funding in this case comes from investors, investment banks and other financial institutions.

Venture capital, as mentioned in studies in this field, can take both monetary and non-monetary form, such as for example the managerial practice or technical expertise. American and European practice have shown that venture capital funding has had a beneficial impact on innovative start-ups with potential for quick development. The areas of success of venture capital financing are related to the field of advanced technologies and IT.

Obtained results. Venture capital is a modern financial instrument, widely used in international economic practice, for the financing of a start-up business, its development or redemption by the investor when restructuring the property. The notion of venture capital was "borrowed" in the Romanian economic language from English, hence the name "capital venture" which implies the presence in the investor-entrepreneur relationship of the element of "adventure" and risk [1, p. 101]. Studies carried out in the field of financing through venture capital, as well as according to some authors such as Erhan L., Dumitrescu V., Kotelnicov V., Stefanova Iu., highlight a number of common features of this financing, such as:

- venture capital is directed to small enterprises and those with advanced technologies, which are oriented towards the elaboration of innovative market projects;
- venture capital is granted on a medium and long term and cannot be withdrawn before the accomplishment of the project;

- The investments are made in companies whose shares are not listed on the market yet, but still represent a growth potential;
- venture capital financing is usually carried out for a period of 5-7 years, with priority given to innovation companies with a clear growth potential, but which still do not show considerable profits in their activity;
- venture capital is primarily intended to support non-traditional and original ideas on the market, which on the one hand increase the risk and, on the other hand, offer a competitive advantage.

Risky investments for IMM-s play the role of a catalyst, which attracts also other types of investments, after the initial ones have been justified and capitalized already by the of increasing sales revenues, profitability, expanding the sales market, etc. [1, p.102].

According to Robinson and Van Osnabrugge, Venture Capital is the financial capital provided to young and innovative companies, where both risks and potential returns are increased. The venture capital offered by business angels tends to be more speculative and earlier than that traditionally offered by the formal venture capital industry [2].

The studies conducted by the Organisation for Economic Co-operation and Development (OECD) characterise the development of the venture capital industry as an important framework condition for fostering innovative entrepreneurship [3]. The main features of venture capital, as presented by the Organisation for Economic Co-operation and Development, are [3]:

- ✓ The risk is divided between the venture capital fund and the entrepreneur;
- ✓ The period for which the investment is made is usually between 3 and 7 years;
- ✓ Investors are strategically involved in business development, advising entrepreneurs in order to maximize long-term return on investment;
- ✓ Before the financial analysis of the investment, investors evaluate the market in which the company operates, the strategy and the management team;
- ✓ This category of investors is not primarily aimed at obtaining gains from the distribution of dividends, but at the gains that can be achieved on the exit from the investment. At this last stage, the company is listed on the stock exchange or sold to another investor.

Regarding the international practice on venture capital financing, a distinction can be made between two aspects, totally different in this field, the European practice and the American practice of venture capital financing. The main features of a venture capital investment in Europe are [4]:

- Average investment of 2-3 million Euros;
- Long-term financial investment (investment time horizon of 10-15 years);
- Non-liquid assets (barriers to exit without a transferable market);
- Active participation to help start-ups in the growth phase;
- Predicting a high return on investment due to a high risk and/ or a strategic interest;
- Payment of a fee to the investment manager (20% of the investment);
- Specialized skills and dedicated management team.

Venture capital funds can either invest exclusively in companies in the country where they are registered or have a multinational dimension. By 30 June 2018, 42% of venture capital funds supported by the EU had a multinational dimension. Regarding the amounts invested in enterprises by venture capital funds supported by EU, studies show that Member States that were attractive for venture capital benefited the most from EU intervention instruments. France, Germany and the United Kingdom stand out, as they represent 50% of these investments. As these are the Member States with the largest economies in the EU, such a concentration does not help to encourage a European venture capital market. Until the first half of 2018, none of the EU-backed and centrally managed venture capital funds have invested in Cyprus, Malta, Slovenia or Slovakia, whereas in Bulgaria, the Czech Republic, Hungary, Poland and Romania, limited investments were made, in a total volume of 29 million Euros [4].

Venture capital financing initially involves research into the area in which it will be invested afterwards. This is determined by the fact that venture capital involves the investment of larger amounts of money in fewer companies, this basic research being very important. Most venture capital professionals have had previous experience, often being capital research analysts; others have a Master of Business Administration degree (MBA). Venture capital professionals also tend to focus on a particular industry. A venture capitalist that specializes in healthcare, for example, may have previous experience as healthcare analyst.

After the examination of the type of the company in which the investment is to be made, the company or investor will use the financing. These funds can be provided simultaneously, but subsequently the capital is given in tranches. The undertaking or investor then takes an active role in the company which receives financing, to consult and monitor the progress before releasing additional funds. After a period of about five – six years after the initial investment, the investor leaves the company, starting a merger, acquisition or initial public offering. Venture capital is also a way in which the public and private sectors can build an institution that systematically creates business networks for new companies and industries so that they can progress and develop. This institution helps identify promising new companies and provides them with financing, technical skills, consultancy, marketing know-how and business models. After the integration into the business network, these companies are more likely to succeed, as they become "nodes" in search networks for product design and construction in their field [5, p.62].

Venture capital funds are investment funds that manage the money of investors who seek private equity in small- to medium-sized enterprises with strong growth potential. These investments are generally characterized as very high-risk and high-return opportunities. Venture capital is a type of equity financing that gives entrepreneurial or other small companies the ability to raise funding. Venture capital funds are private equity investment instruments that seek to invest in firms that have high-risk and high-return profiles, based on a company's size, assets, and stage of product development. Venture capital fund seeks private equity investments that have the potential of generating large positive profits for its investors. This normally means the fund's manager or managers review hundreds of business plans in search of potentially high-growth companies. The fund managers make investment decisions based on the prospectus and the expectations of the fund's investors. After an investment is made, the fund charges an annual management fee of about 2% [5, p.40].

In Romanian legislation, some references are made to the term venture capital fund. Thus, venture capital funds can be defined as undertakings for the collective investment in transferable securities, which mobilize financial resources from private, Romanian or foreign persons. According to the regulations from the field of venture capital financings, "the venture capital fund is an undertaking for the collective investment in transferable securities, set up as a closed-end fund or as an investment company, by mobilizing financial resources from individuals or legal persons, persons under private law, Romanian or foreign persons"[6, art.2].

Practice has shown that venture capital funds make a decisive contribution to the professionalization of funded small and medium-sized start-up enterprises. They can also impose direct management control and can often require top management changes. According to data presented in a study conducted in Romania in the field of venture capital financing, venture capital funds usually focus only on a few industries: digital economy (Information and communications technology (ICT), internet, electronics), health sector (biotech, medical technologies, life sciences). In the ICT sector, software accounted for 70% of venture capital funding. The preference of venture capital for consumer services and ICT can be explained by immediate and direct contact with the consumer, which allows for quick feedback on the possibility of the investment yielding rapid results. Although it can be risky for investors, the above-average return associated with these investments is an element of increased attractiveness. For new companies or enterprises with a limited operating history (less than two years), venture capital financing is becoming increasingly popular - even essential - for raising capital, especially if they do not have capital market access, bank loans or other financial instruments. The main disadvantage is that investors usually obtain shares or stocks in the company, so they can influence the decision-making flow of those entities.

Various studies show that 67% of investors consider a priority the management team being capable of carrying out a sustained effort; 67% of investors also consider the management team's knowledge of the market as a priority; 31% of investors consider the leading skills of the entrepreneur to be the priority and, somewhat surprisingly, only 28% consider investment returns to be the main success factor [5, p.74].

The basic objective for innovative start-ups is to find a capital investor able to support the beginning of the business with large amounts of money, and this criterion is best fulfilled by the venture capital fund. This type of capital is attractive for small, new companies, which are unknown on the market, unable to raise this capital on the market or through bank loans. Although there are several possibilities and models for financing start-ups, including Business Angels or acceleration/

improvement programs, venture capital has proven to be more appropriate for this type of entrepreneurship.

Research in this field has shown that venture capital often includes financing for small businesses, which are in the start-up phase and with potential growth and development in the future. Venture capital financing stimulates economic growth through the creation and expansion of innovative businesses; new jobs are created; investing in research and development is increased and entrepreneurship, competitiveness and innovation is supported. International practice highlights venture capital financing as one of the most advantageous and efficient forms of support for small and medium-sized enterprises in the market penetration phase.

During the last 5 years, over 122 billion US dollars have been invested in European start-ups. 2019 is a record year for European start-ups, companies have collected over 36 billion US dollars, which is a maximum for the last 5 years, or about 7 billion US dollars more than in 2018. The annual increase in venture capital financing in the period 2015-2019 constituted 25%. Starting with 2015, the volume of funds collected by European start-ups has practically increased twice.

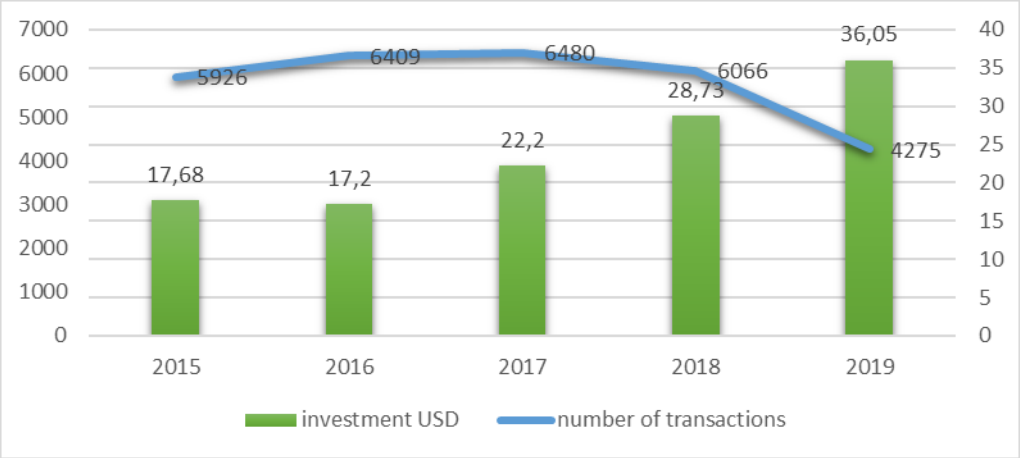

Fig. 1. The volume of investments in European start-ups and the number of transactions in the period 2015-2019 [7]

From Figure 1, we can see the doubling of venture capital financing over the period 2015-2019, i.e. a significant increase from USD 17.68 billion in 2015 to USD 36.05 billion in 2019. At the same time, the number of transactions by which venture capital was insured increased slightly over the period 2015-2018, from 5926 to 6066 in 2018. For 2019, the number of transactions decreased to 4275. According to these data we can found that, even if the number of transactions decreased, a higher level of volume of financing was ensured, being guaranteed the needs to be financed for the applicants.

As is well known, the world leaders in venture capital financing are the USA, followed by China. Despite the fact that the European continent has much lower comparative values than the two world leaders, in recent years there has been a considerable increase in venture capital financing in this area, especially in northern Europe. The leader of northern Europe is the United Kingdom. Sweden, which is part of the countries from northern Europe, ranked fourth in 2019. Western Europe received USD 14.9 billion in funding in 2019 [7]. The top three leading countries in this regard are Germany, France and Switzerland, which are among the top six countries in terms of volume and number of funding.

Figure 2 shows that the largest share of venture capital financing in Europe is approximately 51,7% for northern Europe, where the volume of financing in the 2014-2019 period rose 3,5 times, i.e. from USD 5,84 billion in 2014 to USD 18,63 billion in 2019. Western Europe has a share of about 41.4%, registering an increase of about 3 times in the period 2014-2019, from USD 5.59 billion in 2014 to USD 14.93 billion in 2019.

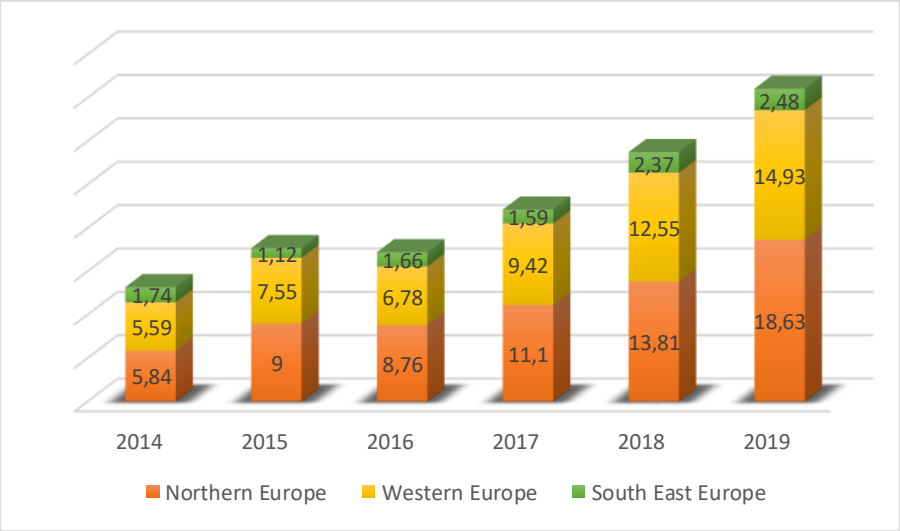

Fig. 2. Evolution of the volume of financing through venture capital in the European space in the period 2014-2019 (billion USD) [7]

Southeast Europe has the lowest share of 6.88% in the European area with a volume of USD 2.48 billion in 2019, which increased in the period 2014-2019 only 1.4 times.

The top 10 leading countries in the field of venture capital financing is represented in Figure 3. The United Kingdom ranks first in the top of the first European countries in the field of venture capital financing, registering thus 1425 transactions in a total volume of USD 14.31 billion, which constitutes 40% of the European market. The second place belongs to Germany with 444 transactions in the volume of USD 6.65 billion, which constitutes 18% of the European market. France ranked third with 425 transactions in the amount of USD 4.39 billion [7]. The next countries in the ranking are Sweden with 278 transactions, Spain with 270 and Switzerland with 246.

Today, there are successful companies, such as Shazam, Spotify, Monitise and Seatwave, with capitalisations of more than EUR 100 million [5, p.138]. There are also venture capitalists who have made very profitable exits from the companies in which they have invested, very significant examples in this regard being Autonomy and Skype, brands that have become important business entities for their buyers.

One of the most important players in the European venture capital market is the European Investment Fund (EIF). In 2018, the EIF signed agreements with venture capital funds committing to invest EUR 1.4 billion. The EIF supports financial intermediaries that provide financing for small and medium-sized enterprises (SMEs) across Europe. Its main shareholders are the European Investment Bank (EIB) (58.6% of the capital), the EU, represented by the European Commission (29.7%), and other stakeholders, including public and private banks and financial institutions 18. The EIF implements venture capital intervention instruments primarily on behalf of others, such as the EU, the EIB (under the Risk Capital Resources (RCR) mandate), national or regional authorities and private investors [4].

In the historical context and in order to move to a pan-European venture capital market, the European Union adopted in 2013 a Regulation on European venture capital funds (No 345/2013). It sets out a new label on the "European Venture Capital Fund" and includes new measures to allow risk investors to trade their funds across the EU, based on a unique set of rules. This setting includes unchangeable requirements and conditions for managers of collective investment undertakings wishing to use the name "EuVECA" regarding the distribution of eligible venture capital funds in the Union, thus contributing to the proper functioning of the internal market [5, p.138]. The Regulation provides permanent rules on the distribution of eligible venture capital funds to eligible investors in the Union; the structure of the portfolio of eligible venture capital funds; the eligible investment instruments and techniques to be used by eligible venture capital funds, as well as the organization, conduct and transparency of the managers of eligible venture capital funds. According to that Regulation, the administrators of the fund with eligible risk capital shall ensure that, when purchasing assets that are not eligible instruments, the part of the total capital contributions and unpaid working capital used for the acquisition of such assets does not exceed 30%. The 30% of limited value is calculated based on the amounts that can be invested after deducting all relevant costs. Holdings of

cash and cash equivalents are not taken into account in calculating this limit, as cash and cash equivalents should not be considered investments. The managers of the eligible venture capital fund shall not use any method at regarding to the eligible venture capital fund that would increase the fund's exposure above its committed capital, either by borrowing cash or securities, or by engaging in positions related to derivative financial instruments or by any other means. The purpose of this ordinance is to label the "EuVECA", to increase the growth and innovation of small and medium-sized enterprises in the EU. With aims as important as these, the label was designed to be an important tool for achieving the goals set for the Europe 2020 strategy, adopted in 2010.

Conclusions. Venture capital financing is still a new method borrowed from the US and successfully developed in recent years in European countries. For the Republic of Moldova, as for other Eastern European countries, this possibility of financing remains less known and developed. International practice highlights that the transition of a company from the initial stage to the extension can be achieved through direct investment. So, among the most common forms of financing in this regard can be achieved only through venture capital. The purpose of venture capital investors is common, and presumes investing in the form of share capital in start-ups, in order to make a profit from the development of the enterprise and its sale to other strategic investors after a certain period of time.

Many of the structural factors that can either boost or limit venture capital in Europe are still largely the prerogative of the Member States. For example, national tax laws may hinder the development of the venture capital market, those governing business and employment may restrict the recruitment of staff, and the regulatory framework can diminish investor's wish to risk and may limit fundraising.

Venture capital can be described as targeted capital in the form of long-term direct investment, in unsafe companies, which are in the transition stage. The given investments have the role of stimulating innovative projects, know-hows as well as new forms of business. Investments are made by venture capital funds considered professional participants in the capital market, which manages the money of people and large companies. The capacity of these investments can vary between 5 and 20 million dollars [8, p.52], and investments less than these amounts are not taken into account, due to the high administrative costs incurred by venture capital funds. Apparently, not all companies are prepared for this type of capital; one reason would be that not everyone has the experience of business angels. With regard to venture capital funds, we can mention their considerable support for entrepreneurs, helping them find development partners, suppliers and strategic customers, as well as professional managers and specialists. The basic investment of a venture capital fund is not made in equipment or products, but in the people who promote the project, in the management of the company.

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RESEARCH OF HEALTH AS A COMPONENT OF LABOR POTENTIAL OF THE COUNTRY BY METHODS OF ECONOMETRIC ANALYSIS

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ABSTRACT

The population health indicator, which has an impact on the development of labor potential and its demographic component, has been studied. A correlation analysis of the factors influencing the state of health of the population was performed. It has been proven that there is a strong relationship between life expectancy as an indicator of health and the factors that characterize the health care system, economic development of the state, quality of food and lifestyle. Spatial econometric models of the relationship between effective variable life expectancy and factor characteristics of different nature based on statistical material from 38 European countries were created. The obtained models have high values of adequacy and accuracy criteria, as well as satisfactory predictive quality.

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Introduction. The gradual movement of the country on the path of social progress depends on the development of its productive forces, the central element of which is labor potential. Under the labor potential of scientists understand the set of labor resources and reserves of living labor, able to achieve the set goals. The labor potential of Ukraine, like any other country, is a complex socio-economic category, so its structure depends on many characteristics. Factors that affect the state of labor potential of society, region, or individual enterprise include demographic, ecological-geographical, socio-economic, socio-psychological, legal, information and communication, technical and organizational and industry. Thus, emphasizing the most important of the factors influencing the labor potential, labor potential can be defined as the total number of citizens of working age who, according to certain characteristics (health, psychophysiological characteristics, educational, professional and intellectual level, socio-ethnic mentality) are able and intend to work" [1]. That is, the quantitative composition of the labor potential is best reflected in demographic indicators (number and growth of the existing population, quantitative characteristics of the economically active population, birth and death rates, migration, etc.). Unfortunately, the current period of development of Ukraine's labor potential is accompanied by a long demographic crisis. Over the last 12-14 years, the population of Ukraine has decreased by almost 4 million people. Accordingly, the size of labor potential and the available labor force decreased. Most researchers agree that the quantitative reduction of the labor force is accompanied by a deterioration in the qualitative characteristics of the working population: negative changes relate to the health of the population, its intellectual level, the degradation of the gene pool [2].

Actually, it turns out that the health of the population affects both the quantitative and qualitative characteristics of labor potential, as the deterioration of public health weakens the immune system, reduces the endurance and strength of workers and employees, as well as their creative

abilities. Ultimately, this leads to premature death, ie to a quantitative reduction in the country's labor potential. Careful analysis of undesirable trends in the state and dynamics of labor resources involves the study of factors that affect the labor potential of the country, including econometric methods. However, despite the large number of bibliographic sources devoted to this topic, the factors influencing the state and development of labor potential, in particular the factor of health, remain insufficiently covered in the literature.

Thus, **the purpose of this article** is to build and analyze spatial regression models of the dependence of the health indicator on the factors influencing it on the statistical material of European countries.

Review of literature and data sources. In this study, health is considered as a component of the labor potential of society (country), but in general it is a socio-economic category, which is the subject of research by scientists in many fields of knowledge, including philosophy, sociology, political economy, medicine, demography.

From the many approaches to the definition of health, we consider the philosophical - normative, in which health is the state of normal functioning of the organism at all levels of its organization, the normal course of biological processes, which determines individual survival and reproduction. The definition of health proposed by the eminent Ukrainian physician and writer Mykola Amosov is also similar to this approach. From his point of view, "health is the maximum productivity of organs while maintaining the qualitative limits of their functions" [3].

The World Health Organization (WHO) in its documents defines health within the socio-valued approach as a state of complete physical and social well-being. Well-being is a dynamic state of mind, which is characterized by a certain mental harmony between the abilities and expectations of the employee and the requirements and opportunities represented by the environment [4].

It has only been a subject of research in the field of health economics since the last third of the twentieth century, despite the fact that prominent economists of the past have taken into account the component of health in their work. For example, Alfred Marshall wrote in [5]: "… The health and strength of the population include three components - physical, mental and moral. They form the basis for productivity and the creation of material goods. In turn, material wealth increases health".

Thus, in the socio-economic sphere of health creates the conditions for active creative work of the individual in society. It gives a person the ability and desire to consume material goods, as well as the ability to learn, develop, reproduce such economic entities.

In research in social medicine, it is common to distinguish several levels at which health-related processes are considered and modeled:

– individual - the health of the individual;
– group - health of social and ethnic groups;
– regional - health of the population of administrative territories;
– public - the health of society as a whole, the health of the nation, population.

Public health is understood as a conditional statistical concept due to the complex influence of social and biological environmental factors, which is assessed by demographic indicators, indicators of physical development, morbidity, disability and the prevalence of prenosological (ie borderline before the disease) conditions [6].

Public health as a whole guarantees economic growth and the country's competitiveness in global markets.

To analyze what factors affect public health, it is important to determine its indicators, ie quantitative indicators that to some extent reflect the state of public health.

According to WHO documents, the following indicators should be taken into account for public health assessment [4]:

- GNP deductions for health care;
- Availability of first aid;
- The level of immunization of the population;
- Level of examination of pregnant women by qualified personnel;
- Nutritional status of children;
- Infant mortality rate;
- Average life expectancy;
- Hygienic literacy of the population.

From the point of view of researchers, life expectancy and mortality are chosen as the best and most frequently used health indicator in cross-country studies [7–10]. These indicators are most often used because they are available in all countries where there are systems for collecting and processing demographic statistics and civil registration. Therefore, such data must be reliable. Some researchers choose these indicators in gender. Life expectancy is sometimes chosen at the age of 65. Infant mortality indicators are also selected in surveys and cross-country comparisons in developing countries [11]. In this study, I chose healthy life expectancy (HALE) as the indicator for the health of the country's population.

Health state, and therefore life expectancy as an important indicator, depends on a large number of socio-economic factors, the study of which is sometimes contradictory. With regard to public health, such factors have been carefully analyzed in a WHO review [12]. These indicators and their groups can be characterized as follows: educational factors, income characteristics and indicators of income inequality (Gini coefficients), factors of urbanization, indicators that reflect the functioning of the health care system, factors of quality of life and impact (negative) environment.

Let's briefly discuss each group of factors. Most researchers claim that the level of education has a positive effect on the health of the population. First, the level of education and culture depends on the hygienic literacy of the population. Second, educated individuals are aware of, generate and promote models of healthy living. The influence of education on life expectancy was studied, for example, in the article by TL Kharkova, S. Yu. Nikitina and E.M. Andreeva [10], who showed that in most age groups in Russia the level of education reduces the age of mortality.

The influence of purely economic determinants on life expectancy is also not disputed by experts. Most often, at the level of intercountries` comparisons, the GDP per capita is chosen at current prices or converted into international dollars at purchasing power parity, and sometimes the average per capita income is added to it. Some researchers also evaluate the relationship between life expectancy and indicators of property inequality - the Gini coefficient. Such a dependence, for example, was found in the work of Andreev and Shkolnikov [9]. Unemployment is also linked to economic development, which has a negative impact on life expectancy.

Factors such as urban population share and population density are also taken into account in some studies. These parameters for countries with a large area correlate with the availability of health services.

The results of studies on the impact of the characteristics of the health care system on the health of the population are quite controversial. Usually, such parameters are selected funds that are reimbursed for these purposes, often in relative terms as a percentage of GDP. In addition to financial indicators, quantitative indicators are also considered: the density of hospital beds and the number of doctors and nurses per 10,000 population.

The relationship between health indicators and health care costs is quite complex, and it is very difficult for a researcher to understand what is primary and what is secondary. On the one hand, increasing health care benefits means increasing those who have improved their health. On the other hand, an increase in life expectancy leads to a deterioration in health with each passing year, and therefore to the cost of additional funds for the treatment of diseases of old age.

These discrepancies are reflected, for example, in [13], where 31 European countries were analyzed and it is shown that despite the fact that health care costs are related to life expectancy, the number of hospital beds per capita correlates with the above indicator.

Many factor models of health effects use groups of indicators that describe a healthy lifestyle. Such factors include per capita alcohol consumption, the number of smokers per 100 females and males, the percentage of the overweight adult population, the consumption of animal protein in grams per day per person, and others. In all studies where they were included, these factors were significant, and their impact was consistent with the hypotheses.

On the last we will consider factors of influence of environment. These include such indicators as emissions of harmful substances into the atmosphere (in kg per capita): concentration of fine suspended particles, CO2 emissions per dollar of GDP, pesticides. The influence of some of these indicators was discussed in [14] and [12]. It is not as significant as the influence of other factors, but in [12] it is noted that "Factors that determine health and social justice are in a relationship of interdependence with factors that determine environmental and economic sustainability".

Thus, summarizing the numerous studies on the factors that affect public health, we can conclude that they are closely related and it is difficult to separate them from each other. Actually, the

economic development of the state has an impact on the environment, on the way of life of the population, and on the health care system in the country. On the other hand, the state of health of the population generates the demand for medical services, and thus affects the development of the health care system, the amount of savings on it and others.

Thus, the task of modeling the relationship between the life expectancy indicator and the factors that affect it is methodologically quite complex. Data for modeling were selected mainly from statistical databases of the World Bank and WHO.

Analysis/study/results. The easiest way to measure the impact of various factor traits is not a productive variable using a linear econometric model. In this paper several spatial econometric models will be build/ The calculations are based on OECD and WHO statistics for 2016 for 38 European countries, namely, Armenia, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czechia, Denmark, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, North Macedonia, Norway, Poland, Portugal, the Republic of Moldova, Romania, the Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, the United Kingdom of Great Britain and Northern Ireland.

The resultant variable was the healthy life expectancy of HALE, and the factor variables had to be selected from a set of available traits found in WHO documents and other literature. The list includes the following factors:

- GDP per capita;
- Average salary per month;
- Curent health expenditure;
- Hospital beds (per 10,000 population);
- Population living in urban areas (%);
- Overweight in both sexes, and separately for men and women;
- Insufficient weight in both sexes, and separately for men and women;
- Alcohol consumption for both sexes, and separately for men and women;
- Smoking for both sexes, and separately for men and women;
- Consumption of protein;
- Concentration of fine solid particles for the country, and separately for settlements and cities;
- Concentration of CO2 in the air.
- Application of pesticides
- Gini coefficient;
- Unemployment;
- Public expenditure on education (% of GDP).

From the correlation analysis conducted for these factors, it became clear that the most important for life expectancy are GDP per capita, health care costs, and average wages. It should be mentioned that the natural logarithms of these values were used instead of GDP per capita and health expenditure. Next in importance are factors such as protein intake, the proportion of overweight men and smoking in men. In some cases, these factors may be added by the proportion of underweight men and the concentration of particulate matter in the air.

Other factors during the analysis were not so significant. And for the factors of alcohol consumption, unemployment, the share of overweight and underweight women, it turned out that they do not affect life expectancy in Europe. The insignificance of alcohol for life expectancy draws attention. This can be explained by the fact that in Europe, they consume high-quality alcohol and rather moderately, not so that drinking was the cause of death.

Therefore, after the construction of the correlation matrix were selected those factors that showed a close correlation of factors X_j, $j = 1,\ldots,m$ with Y ($0{,}6 \le r_{yj} \le 1$). All of them are given in table. 1.

On the basis of Table 1, an economometric model has been established, in which all the named factors were presented, however, GDP and health Expenditure were logarithmized.

Table 1. Factors influencing the health of the population by country

	Names of factors in the database of the World Bank, WHO	Abbreviations for simulation and the name of the independent variable	Links to data sources
Group of economic factors	– GDP per Capita; – Average Salary	– GDP, X2; – AvSal, X3	[15]
Indicators that characterize the health care system	– Current Health Expenditure per capita; – Hospital beds (per 10000 population)	– Exp, X1; – Hosp, X9	[16] [17]
Indicators that characterize the ecological state	– CO2 emissions (kg per 2011 PPP $ of GDP); – Conc, Of PM2,5 Rural (concentration of solid particles)	– CO2, X10; – PM2,5, X7	[18] [19]
Indicators of unhealthy lifestyle	– Smoking prevalence, males (% of adults); – Prevalence of overweight among adults, BMI ≥ 25 (crude estimate) (%)	– Smokm, X5; – Overw, X6	[20] [21]
Indicators of food quality	– Average supply of protein of animal origin (g/capita/day) (3-year average); – Prevalence of underweight among adults, BMI < 18 (crude estimate) (%)	– Protein, X4; – Underw, X8	[22] [23]

This econometric model depends on 10 factors and has the form (1)

$$Y=\alpha_0+ \alpha_1X_1+\alpha_2X_2+\ldots+\alpha_{10}X_{10}+\varepsilon. \quad (1)$$

In (1) Y - life expectancy from birth;

X_1 - X_{10} have the same value as in table 1, except that X_1 = ln (GDP), and X_3 = ln (Exp); ε is a random residual component.

Obviously, the constructed model is not perfect, because for 10 factor features we have a rather small sample length. But on its basis by the method of exclusion it is possible to receive other models.

Simultaneously with the exclusion of one of the factors, the normalized coefficient of determination R^2norm was calculated, which, unlike the usual coefficient of determination R^2, does not increase from the addition of factors to the model, if the added factor is not significant. To conduct experiments with R^2norm factors were added to the model in the following order: $Y = f(X_1) \rightarrow Y = f(X_1,X_2) \rightarrow Y=f(X_1,X_2,X_3) \rightarrow\ldots\rightarrow Y = f(X_1,\ldots,X_{10})$. Table 2 shows the values of R^2 and R^2norm corresponding to the number of factors in the model. The R^2norm was calculated by the formula (2):

$$R^2_{норм}=1-(1-R^2)\frac{n-1}{n-m-1}, \quad (2)$$

where n is the sample length;

m is the number of model factors.

Table 2. Changing criteria R^2norm and R^2 depending on the number of factors

The number of factors	1	2	3	4	5	6	7	8	9	10
R^2	0,846	0,852	0,856	0,857	0,858	0,881	0,884	0,886	0,917	0,917
R^2 norm	0,842	0,843	0,844	0,840	0,836	0,858	0,858	0,855	0,891	0,887

Initially, a 6-factor model was constructed that included the factors that most strongly correlated with LE (Life Expectancy). The names of the factors remained as they were in model (1). The number of factors was chosen for reasons of sufficient sample length and the ability to take into account factors of different nature.

The equation of the six-factor model with the estimated coefficients has the form (3):

$$Y = 62,99 + 4,18X_1 - 2,59X_2 + 0,00068X_3 + 0,009X_4 - 0,003X_5 + 0,136X_6. \quad (3)$$

Carrying out rapid diagnostics of this model, it can be noted that it has high values of the coefficient of determination ($R^2 = 0,88$) and Fisher's criterion ($F = 38,43$), as well as a low value of the standard error s_e, which indicates its adequacy. On the other hand, the values of the *t*-statistics of the coefficients (t_0=8,52; t_1=3,67; t_2=-1,86; t_3=1,15; t_4=0,348; t_5=-0,101; t_6=2,43) show that only the coefficients α_0, α_1 and α_6 are significant.

The low value of *t*-statistics with a simultaneously high coefficient of determination is often a manifestation of the multicollinearity of the model factors. Therefore, the model was tested for multicollinearity using χ^2-criterion and *F*-criterion. This test showed that there is multicollinearity in the data. The principal component method was used to get rid of it.

When applying this method, we usually move from the initial factor features to some new vectors, which are called principal components, each of which is some linear combination of the original features. On the one hand, these main components have the property of orthogonality to each other, ie there will be no multicollinearity between them. On the other hand, the main components constructed by the method are not always easy to interpret.

The principal components method allows to calculate the matrix of factor loadings *W*, the elements of which are essentially the correlation coefficients between the main components and the original factor characteristics. This allows you to interpret the main components in terms of the subject area of the model. The factor loadings matrix can be obtained by finding the eigenvalues and eigenvectors of the correlation matrix by the formula:

$$W = V \cdot \Lambda^{\frac{1}{2}} = \begin{bmatrix} w_{11} & w_{12} & \dots & w_{1n} \\ w_{21} & w_{22} & \dots & w_{2n} \\ \dots & \dots & \dots & \dots \\ w_{n1} & w_{n2} & \dots & w_{nn} \end{bmatrix}, \quad (4)$$

where V is a matrix composed of columns of normalized eigenvectors;

$\Lambda^{1/2}$ - diagonal matrix, where the diagonal contains the roots of the eigenvalues of the correlation matrix R.

All calculations for the principal components method were performed in the Statistica system. After rotation of the matrix *W* by the method of normalized biquartimax, such a matrix of factor loadings was obtained as shown in Fig. 1.

We will consider positive and large enough (more than 0.7) coefficients of the factor load matrix. In the first component, these conditions correspond to the correlation coefficients for the logarithm of GDP and monetary expenditures for the health care system, as well as for wages and protein consumption. That is, we can explain the first main component as a component of economic development of the state, because the consumption of protein along with monetary and income characteristics indicates the welfare of the country. The largest amount of protein is consumed in developed countries. I note that other coefficients of the first component, significant in absolute terms, but negative in sign, are also indicators of economic development, but of its shadow side - high concentration of fine particles in the air, CO2 emissions, smoking - all these are unattractive manifestations of our civilization.

The second component, if one takes the largest positive factor, is responsible for the number of overweight men. As the econometric analysis shows, this factor is included in all regression dependencies with a positive sign, and therefore causes a positive effect on HALE. At the same time, the only factor other than the one considered, which has a large absolute but negative correlation coefficient, is the percentage of men who are underweight. That is, we can say that the second main component is responsible for the percentage of men with excess or insufficient body weight. The only large ratio in the third component corresponds to the number of hospital beds in the country per 10,000 population.

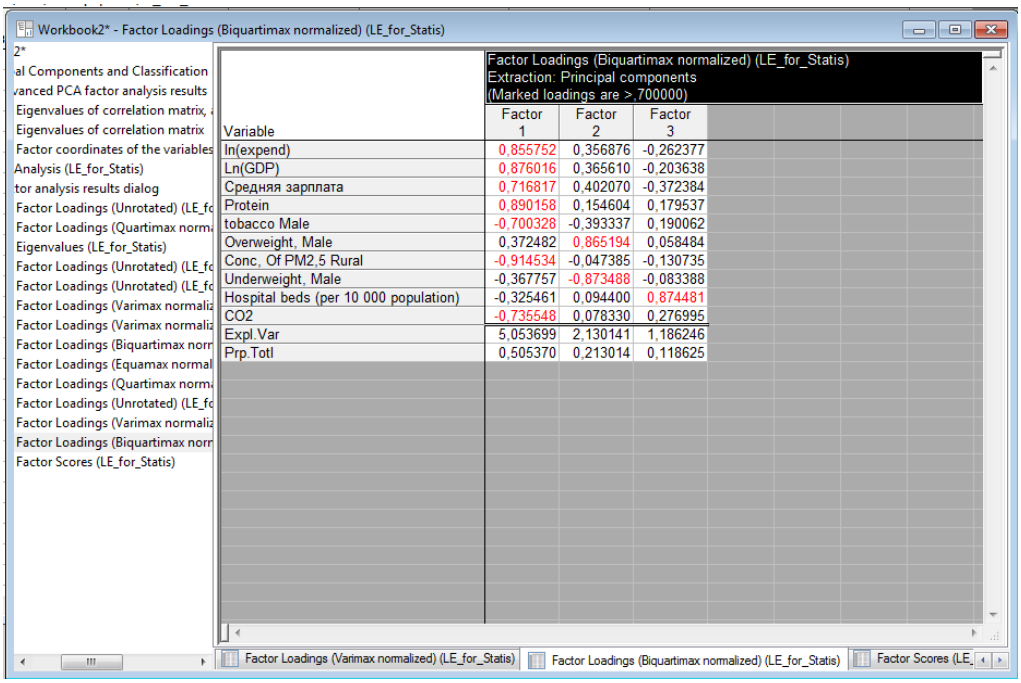

Fig. 1. Elements of the matrix of factor loads after rotation

After the interpretation of the principal components, it is possible to obtain their values by the formula $F = W^{-1}Z$ (Z is a matrix of standardized initial factors) and to use the regression model on these three components, so that multicollinearity will be eliminated.

With the help of Excel function LINEST the coefficients of the regression on the three principal components have been estimated. LINEST results can be shown in Table 3.

Let us write the equation for this model, instead of Y we write its designation LE.

In this way,

$$LE = 78{,}43 + 2{,}68F_1 + 1{,}72F_2 - 1{,}41F_3. \quad (5)$$

Table 3. Statistical criteria for regression on head components, insured by LINEST

	α_{F3}	α_{F2}	α_{F1}	α_0
Model coefficients	-1,41369	1,725555	2,6816	78,43684
Standard errors $s_{\alpha j}$	0,225357	0,225357	0,225357	0,222372
R^2 and s_e	0,87572	1,37079	#Н/Д	#Н/Д
F- criterion	79,85887	34	#Н/Д	#Н/Д
SS, MS	450,1802	63,88823	#Н/Д	#Н/Д
t-statistics of coefficients	-6,27312	7,657	11,89937	352,7288

As one can see from table 3, the regression model is built on the main components, has a high quality: a large coefficient of determination $R^2 = 0{,}87$; Fisher's criterion $F = 79{,}85$, which is several times greater than the critical value of $F_{crit} = 2.88$. And the *t*-statistics of the coefficients all turned out to be significant.

Model (5) has a remarkable predictive power. For the point retro-forecast calculated on the set sample values, the average error of approximation in this case does not exceed 1,5%. Thus, model (5) is both adequate and accurate.

The lasteconometric model to be considered in this study includes three factors: X_1 is the expenditure of the health care system, X_6 is the percentage of overweight men, and X_9 is the number of hospital beds. Estimating the coefficients of the model using the LINEST function, for which healthy life expectancy was chosen as the dependent variable Y, we obtain the following equation of the model.

$$Y = 53{,}14 + 2{,}13X_1 + 0{,}18X_6 - 0{,}045X_9 \quad (6)$$

Each of the coefficients of this model has the following meaningful interpretation.

α_0 = 53,14 obviously means the life expectancy that will be in the country if it is not affected by any factors. This value for different models will be different and varies in the range from 53.14 to 67.5 years. Indeed, this value is always lower than real life expectancy, because without the achievement of social progress, our lives would be reduced.

A factor of 2.13 for the factor variable X_1 shows that if the cost of maintaining a health care system per person increases by $ 1, life expectancy will increase by 2.13 years.

Similarly, the coefficient for the variable X_6 means that with an increase in the proportion of overweight men by 1%, life expectancy will increase by 0.18 years.

But with an increase in the number of hospital beds per unit per 10,000 population, life expectancy will decrease by 0.04 years. This paradoxical conclusion about the number of hospital beds is often found in the literature and shows that it is better not to be in the hospital if you are sick, because it reduces life expectancy in the case of unqualified interventions in your body.

Model (6) demonstrates high coefficients of determination and Fisher's criterion (R^2 = 0.9, F = 105), as well as significant t-statistics for all coefficients: t_0=20,46528, t_1=8,621056, t_6=3,694666, t_9=-3,65448. It also has good predictive power. Two countries were selected for testing - Finland and Austria, not included in the sample on which the model was built. The factors specific to these countries are listed in Table 4. There are more than three of them, as a forecast for the six-factor model will still be created. The values of the relevant factor variables were taken from WHO statistics.

Table 4. Significance of factors influencing life expectancy in Finland and Austria

	ln(expend)	Ln(GDP)	Average wages	Protein	Tobacco Male	Overweight, Male	Hospital beds (per 10000 population)
Austria	8,459331	10,78436	3122	61	19,2	58,1	74,2
Finland	8,317498	10,75257	2656	72	20,7	62,5	39,7

For Austria and Finland, point and interval forecasts were constructed using three-factor and six-factor models. These results are shown in Table 5. The relative approximation error was calculated in comparison with the real value of life expectancy observed in these countries in 2016. For Austria, this figure was 81.64 years, and for Finland - 81.43 years.

Table 5. Point and interval forecasts constructed using three-factor and six-factor models

	Point forecast according to the three-factor model	Interval forecast according to the three-factor model	Relative error of approximation of the point forecast	Point forecast according to the six-factor model	Interval forecast according to the six-factor model	Relative error of approximation
Austria	78,49767	[61,25; 95,73]	3,84%	80,991	[63,60;161,41]	0,8%
Finland	80,55133	[63,80; 97,30]	1,079%	80,86	[0,2;161,51]	0,7%

The average approximation error was calculated on the basis of retro forecast data, which was 1,27% for the six-factor model and 1,23% for the three-factor model.

Conclusions. Labor potential is a concept of macro level, which characterizes not only the existing but also the potential labor opportunities of the population, real and potential labor force. One of the most important qualitative indicators of labor potential is the health of the population. Not only the economic development of the state, but also its defense, competitiveness and economic security depend on the state of health of the population.

The relationship between the indicator of public health and the factors influencing it was studied by means of econometric analysis. Several regression models have been built, which have high values of adequacy and accuracy criteria, as well as satisfactory predictive quality. Based on the obtained models, it is possible to accurately predict the life expectancy of the population of a given country, to assess the degree of influence of factor variables on the health indicator, as well as the natural level of life expectancy (excluding the effects of favorable and unfavorable factors).

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BUILDING ORGANIZATIONAL SYSTEM FRAMEWORK MODEL FOR CRISIS MANAGEMENT AND SUSTAINABILITY IN CONSTRUCTION SECTOR OF GEORGIA

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ABSTRACT

The breakout of COVID-19 pandemic is followed by the unexpected and continuous crisis in all fields of activities. Literature is describing the features of challenges of different levels in different segments of economic performance. Georgia's economic development is experiencing inevitable changes, which are not necessarily negative. Crises often lead to changes in the entrepreneurial mindset. The companies start considering new business models for future continuous operations and long-term sustainability. We set studying the current anti-crisis strategies of the construction companies and development of recommended system framework as a research problem. There was considerable doubt whether companies had strategy and plan for handling the crisis beforehand. The article provides some research findings on how companies managed to bring uncertainties and losses to a minimum. The method of interview allowed conducting qualitative analysis of different factors impacting construction projects. The pre-crisis performance, challenges during the crisis, and signs of recovery period are characterized. Study highlights the role of government in maintaining business operations. The results of survey and model for improved resilience is developed and introduced representing recommended set of resources, components of business process for desired outputs and outcomes in the construction business in Georgia.

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Introduction. Since January 30th, 2020 when COVID-19 was declared as global pandemic by the World Health Organization (WHO) exported from People's Republic of China to other countries (WHO, 2020), the outbreak started spreading and threatening globally not only the healthcare system (WHO[a], 2020; Deloitte, 2020), but also business and entrepreneurship activities (Brown, Cowling, 2020; Yue, Cowling, 2020; Korsgaard, et al., 2020; Greene, Rosiello, 2020; Lim, et al, 2020; Ewing Marion Kauffman Foundation, 2020; Fairlie, 2020; Looze, Desai, 2020); agriculture (OECD, 2020; Rediff, 2020); energy (IEA, 2020; IEA[a]; Bertram, et al, 2021; Cheshmehzangi, A., 2020); socio-economic systems (WHO[b], 2020; Nicola, et al, 2020; Kumar, Nayar, 2020; Serafini, et al, 2020; Seiful Islam, et al, 2020; Hunter, 2020); The construction industry have been severely affected by the COVID-19 pandemic (Gamil, Alhagar, 2020).

Indeed, impact of the crisis caused by COVID-19 pandemic outbreak reaches all sectors of economics but varies across them. Construction industry is highly vulnerable to the considerable declines in the economy due to its sensitivity to the phases of business cycles. Increased health risks

have drastically downsized the volumes of construction works leading to the suspension in the project schedules. The supply chain was distracted, employees were laid off, and value creating was slowed down thus creating risks to the terms and conditions of the project contracts. On the other hand, construction bears potential to give great stimulus to economic recovery, particularly to its job creation ability. Timely and well-planned recovery measures can provoke sector's improved sustainability. The quality analysis of existing business-related economic risks, the dialogue and cooperation between governments, financial organizations and construction companies can reveal the potential ways and actions for speedy and less painful recovery from the current crisis.

Literature Review. Since the COVID-19 pandemic breakout some studies investigated the consequences on the economy of industries worldwide. Uncertainty still prevails even in current and future economic developments. The negative impact on GDP in 2020 is estimated to range from −4.8% to −9.8% compared to the baseline level, although the government's fiscal countermeasures result in a positive effect of some 2.5% in real GDP (Havrlant, et al, 2020). According to the World Bank report, a baseline global pandemic scenario 'sees gross domestic product fall by 2 percent below the benchmark for the world, 2.5 percent for developing countries, and 1.8 percent for industrial countries' (World Bank, 2020).

PwC describes the hit to engineering and construction (E&C) companies by the ongoing crisis as 'unprecedented', although industry tends to be affected by cyclical downturns. Projects suffer from delays and even cancellation mostly due to the distracted chain of supply; social distancing created unpredicted constrains; financial performance is worsening and debt restructuration shall be considered (PwC, 2020).

The need for industry members to address both short-term and long-term business challenges has emerged from the ongoing crisis. This includes but is not limited to project-specific responses and solutions considering a new reality in global and local environment (Holland & Knight, 2020). The biggest challenge is that the scale of appropriateness of changes still cannot be defined, metrics are not established and outcomes cannot be predetermined.

Many international organizations throughout the world seek ways to help construction businesses with recommendations for recovery. As an example, European Construction Industry Federation (FIEC) describes the measures being established to help construction companies and workers get through the current crisis (FIEC, 2020). European International Contractors (EIC) predicted impacts of COVID-19 crisis as 'detrimental'. Pandemic affects both key cost components of construction projects - material and labor – and creates threats to the active projects, as well as financial liquidity and entire organizational frameworks of the businesses (EIC, 2020).

Recovery strategies are proposed by both academic studies and practitioners (Sweeney, et al, 2020; Black, 2020).

Georgia's economic stand as a result of COVID-19. At the very outset of pandemic, a joint statement on the impact of the coronavirus on the construction sector was issued by trade organizations of the British construction industry and members of the Civil Construction Association. The statement expressed fears that in addition to the tourism sector, the construction sector would also be significantly affected, the negative impact of COVID-19 on the construction sector is inevitable and it will affect different levels of the industry (Construction, 2020).

Enterprises involved in various economic activities have been hurt to varying degrees. According to Geostat, in 2019, the largest shares of GDP by activity are held by wholesale and retail trade; repair of motor vehicles and motorcycles (4.4 percent), and real estate activities (11.5 percent), manufacturing (10.1 percent), Construction (8.6 percent)[1], agriculture, forestry and fishing (7.2 percent), public administration and defense; compulsory social security (6.8 percent), transportation and storage (6.5 percent), financial and insurance activities (5.4 percent) (National Statistics Office of Georgia, 2020). Such structure of GDP has made Georgia's economy vulnerable, as these sectors have been most affected by the pandemic crisis (EMC, 2020). The construction industry had a large decline (-24.5 Percent). Restrictions imposed for this sector from 31 March to 29 May, 2020 slowed down functioning of the construction companies, leading to severely negative impacts.

According to the research conducted by Galt & Taggart, at the end of March 2020, construction along with production and transportation remained areas without considerable

[1] projections for 2020 indicated that construction would contribute to 13.4 per cent of global GDP (Global Construction Perspectives & Oxford Economics, 2015)

restrictions. However, due to the slowed activities in construction business, global demand for iron was already reduced by that time. In general, private investments fall sharply during the crises. The growth of government infrastructure projects is important for the economy as a whole, as well as for construction companies and their employees (Galt & Taggart, 2020).

Deterioration of construction schedules will then take years to recover. Employment and import of construction materials are endangered. In 2008, employment in construction fell by 28 percent and it took 3 years for the activity to increase again. In 2009 imports of construction materials decreased by 29 percent. Galt & Taggart views construction as an area in which the negative effects of the crisis will not be immediate, rather it will have delayed consequences.

The negative consequences of the pandemic crisis were also analyzed by PwC. According to the survey, 65% of the companies state declining demand as the main problem. However, "the biggest challenge for enterprises in the construction and ICT sectors was the change in the GEL exchange rate and late payments from customers" (PwC, 2020). 50% of the construction sector has suspended business activities or reduced production volumes. In March-April 2020, revenues were almost halved compared to the same period of previous year, which confirms the views of Galt & Taggart. Construction companies lay off around 10% of their employees. This area is also proved to be the most challenging for predicting future revenues.

Key issues for employers and employees to consider. The government of Georgia has elaborated support plan for the construction and development sector.[1] This sector is one of the fastest growing segments of the economy, comprising 9% of a direct and indirect share of the GDP. It employees 101.4 thousand people (7.8 percent of all employed; as of 2019), almost similar to the fact, that before pandemic, construction sector accounted for around 7.7 percent of global employment (ILO, 2020). The development sector in Georgia is characterized by high transmission effects on other sectors of the economy. According to the financial sources, volume of the portfolio of bank loans issued to the sector is 1.2 billion GEL, and the portfolio of bank loans secured by residential real estate - almost 8 billion GEL. In total, the portfolio of loans and mortgages issued to the sector amounted to 9.2 billion GEL (18% of GDP). Expectedly, pandemic resulted in the reduced economic activity, deteriorated economic growth forecasts, purchasing power of the existing and potential customers has decreased and led to a significant decline in the sector's pre-sales; risks of completion of construction projects significantly increased; sales reduced; and credit risks amplified. The risks of significant fluctuations in real estate prices have increased. As a logical result, there may be the risks of significant worsening of the banking portfolio. Moreover, impressive size of this portfolio may serve a systemic threat to the financial sector.

COVID-19 has an impact on employers and contractors involved in construction projects in many ways. At the grassroots level it can lead to a) delays in the completion of projects, and/or b) increased costs for these projects. The following are examples:

The requirement of social distancing cannot affect only the number of employees (which a contractor may have at the facility at any given time), but also limit the number of employees that the contractor takes to and from the facility. In addition, new regulations and requirements were implemented for increased health and safety testing (worker testing, temperature testing, and constant cleaning and sanitation of facilities). Clearly, these requirements significantly increase both the cost and time of a project completion.

Immediate measures taken by Georgian government to lessen the negative consequences of the unexpected crisis.

Government of Georgia accurately analyzed the above potential threats related to delays and cancellation of construction projects as a result of uncertainty and declined purchasing power of consumers and in close cooperation with the National Bank and the private sector, has developed measures to support the construction and development sector. Those measures intend to stimulate demand for residential real estate and, on the other hand, provide access to finance during the crisis.

The measures were detailed and considered all involved parties. In particular:

- The state planned to subsidize some level of the nominal interest rate specified in the mortgage agreement. The amount of the subsidy was to be reduced by the state based on the reduced refinancing rate. The subsidy is supposed to last for 5 years after signing the contract and will be terminated during this period if the refinancing rate is set at less than 5%.

[1] Government of Georgia, 2020. Report on the actions taken by the Government of Georgia against covid-19

- State guarantee will be enacted on the mortgage loan portfolio for the mortgage loan issued in the period of 01/06/2020 - 01/01/2021.
- One-time purchase of residential real estate by the state in the period of 01/06/2020 - 01/01/2021. The procurement will be carried out by auction. The state will use the purchased property as part of a program to provide housing for IDPs.
- Development of a scheme of state guarantee for the completion of the residential real estate project (under which 77 special state programs will be managed).

This is the way how state will insure the risks of completion of current construction projects (Government of Georgia, 2020).

The results of this special anti-crisis plan could not be evaluated in the simulation analysis, as the main beneficiaries of the program are development companies. It is also not feasible to assess its impact on the household level using existing information arrays. In general, government measures provide some benefits for those employed in this sector and whose effectiveness can be assessed at the household level, as their degree of addressability is quite high (Kakulia, et al., 2020).

Organizational Readiness for Anti-Crisis Measures.

Methodology of the study.

Crisis management is one direction of general management of the organization. Crisis management is designed by the organization for overcoming the crisis. It has crucial importance for construction companies because timeliness of the project management almost completely depends on creating such an environment where potential hindering factors are forecasted well ahead and activity measures for bringing threats to the minimum are pre-planned. Methods of crisis management are considered efficient if construction works continue even during the crisis. Based on the findings in both practical activities and academic works in the field of construction, we developed the questionnaire, conducted survey through in-person communication as well as electronic means (in case if interviewee desired to be anonymous), collected data and analyzed it. The content of the questionnaire was intended to help in construction of the organizational system framework model for sustainable development of construction companies. The managers of the five departments were targeted; most important factors (out of nine) for continuous business operations were to be selected; survey has three parts: pre-crisis, crisis, and recovery from crisis.

Study is based on qualitative research method. 12 construction companies of different sizes were selected, from which top managers of 5 leading departments (construction operations, sales, finance, communications, IT) participated in the survey. Therefore, sample consisted of 60 interviewees (even distribution of received responses) (Figure 1).

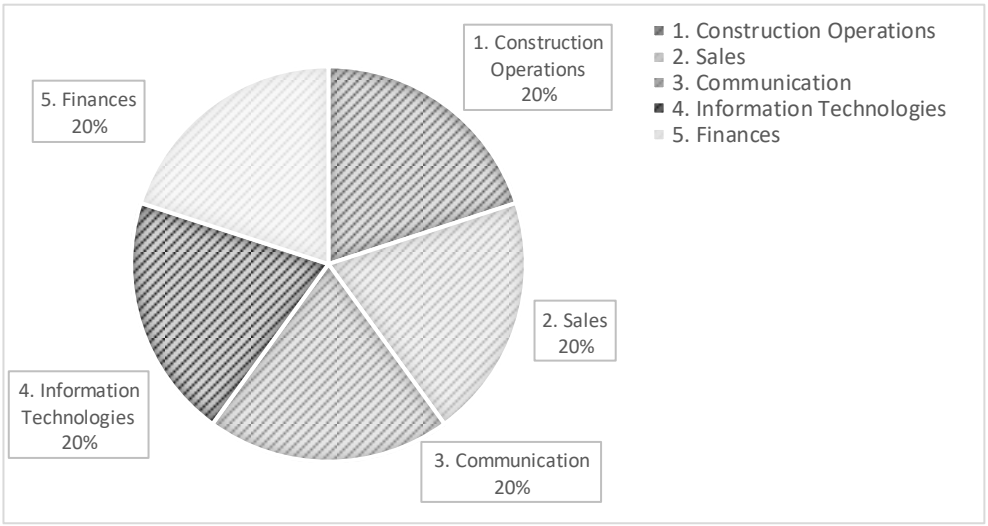

Fig. 1. Distribution of interviewees by departments

Some highlights of the most important survey results are presented below (Figure 2):

- 43.3% indicated financial and organizational factors as most hindering during the crisis and think that these factors slowed down the crisis handling process.

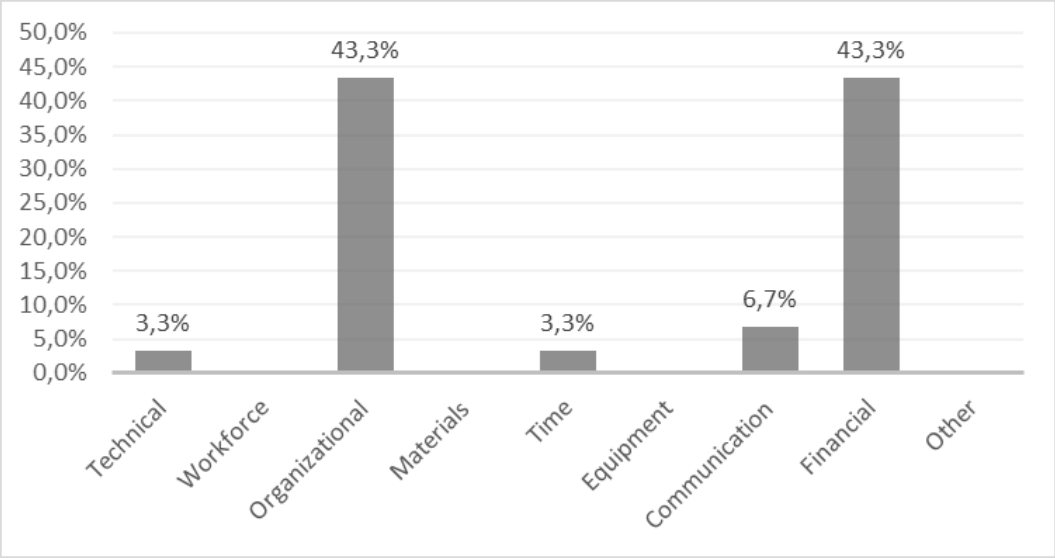

Fig. 2. Important factors for continuous construction operations

Interestingly, survey showed that workforce, materials and equipment were not presenting the considerable challenge. This is due to government's decision to support construction and construction materials organizations with regulation ensuring uninterrupted operations.

Survey results are systematized in the following Table1, which provides responses to the survey questions and are presented in percentages.

Table 1. Responses to the survey questions by categories and sub-categories

Survey Questions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	2	3	4	5	6
I. In the pre-crisis period:					
1. Management had already set general directions for the development	46.7%	26.7%	0	3.3%	23.3%
2. The strategy was addressing important priorities	40%	36.7%	0	10%	13.3%
3. Organizational directions were focused on potential threats and challenges	16.7%	36.7%	3.3%	13.3%	30%
4. There were almost no ad-hoc decisions and statements	10%	40%	3.3%	20%	26.7
II. Impact of crisis caused by COVID-19 pandemic on the activities of the organizations					
1. Operations stopped due to ongoing crisis	Presented Below (in Figure 3)				
2. What is the impact of crisis on your activities? (presented in charts below)	Presented Below (in Figure 4)				
III. Attention to important issues					
1. Challenges during the last one year	Presented below (in Figure 5)				
2. The directions set after the crisis are consistent and rational	16.7%	43.3%	10%	13.3%	16.7%
3. The contracts were not delayed and were not terminated	20%	30%	10%	20%	20%
4. Materials supply was not delayed and did not stop	10%	30%	16.7%	20%	23.3%
5. The budget is in line with the threats posed by the current crisis	16.7%	36.7%	20%	6.7%	20%
6. State regulation of the construction sector is timely and adequate	10%	30%	23.3%	23.3%	13.3%
7. What changes do you expect in the current 2021?	Presented below (in Figure 6)				

Continuation of table 1

1	2	3	4	5	6
IV. The contribution of individual departments in overcoming the crisis					
1. IT dep. was able to successfully transfer administrative staff to remote work in a timely manner (technical support)	56.7%	23.3%	13.3%	3.3%	3.3%
2. Labor safety rules have been changed to protect against the spread of the virus	73.3%	23.3%	0	3.3%	0
3. Internal and external communications worked effectively	26.7%	50%	6.7%	3.3%	13.3%
4. The Operations dep. was able to coordinate activities with other deps.	13.3%	56.7%	3.3%	13.3%	13.3%
5. Sales have successfully changed the strategy, leading to increased sales	16.7%	33.3%	10%	20%	20%
6. Due to limited financial resources, the projects were not delayed or closed	20%	30%	10%	20%	20%

Survey analysis showed results by periods.

Almost half of the interviewees (46.7%) are confident that management was following the predetermined plan of activities and directions in the pre-crisis period. During the same period, organization's strategy was clearly depicting the priorities; and pre-determined directions were corresponding to the proper responses to potential threats and challenges (contingency planning); also, almost half of them think that management was practicing ad-hoc decisions and statements (i.e, unplanned and unexpected decisions prevailed).

Impact of crisis on the activities of the organizations: 50% of respondents stated that their organizations continue operations; 13.3% states that their organizations temporarily stopped activities, but now are back to normal; 10% specified that the operations were stopped due to regulations, while 16.7% responded that they stopped operations completely and forever (Figure 3).

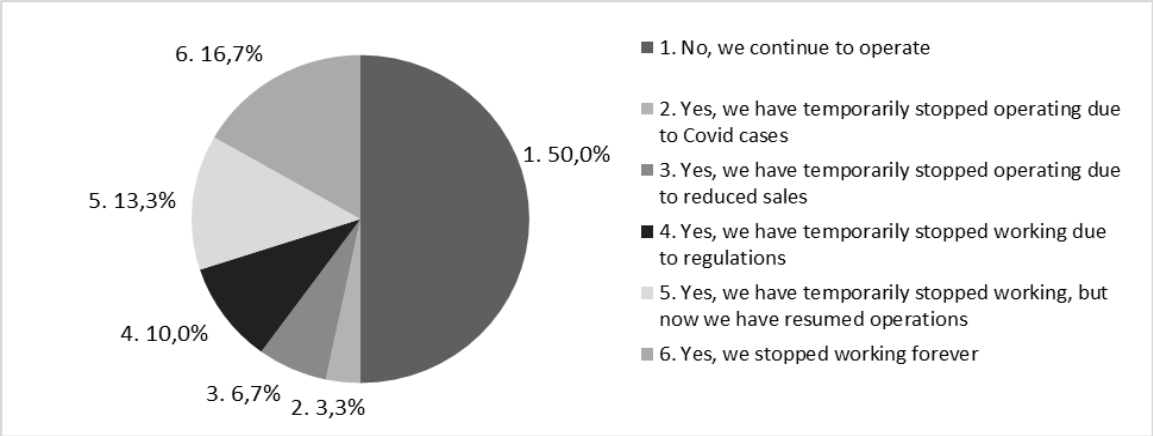

Fig. 3. Operations Stopped Due to Ongoing Crisis

Impact of crisis on revenues, sales and employment is presented in the Figure 4 below.

The majority of respondents stated that sales and therefore revenues declined by 10% to 25% during the crisis period. 37% informed that they have not downsized their staff; 33% informed that they laid off 10% to 25% of employees and 20% stated that they had to reduce their staff by 50% or more.

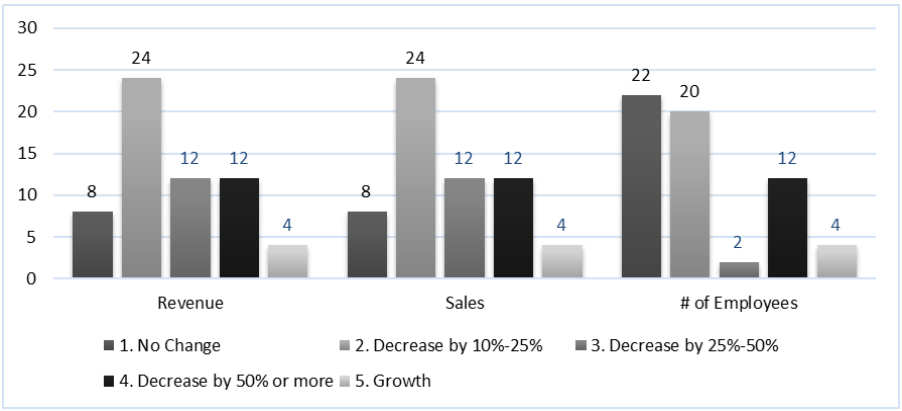

Fig. 4. Impact of Crisis on Activities

Attention to important issues - the question about challenges during the last one year consisted of materials, workers, financial flows from the banks, and financial flows from the customers. Survey results are presented in the Figure 5 below.

The main challenging factor appeared to be the lack of financial resources from both banks (providing loans) and customers (sales revenues) (34 and 40 responses accordingly). Supply of materials (28 responses) and lack of labor force (14 responses) follow as other significant risks.

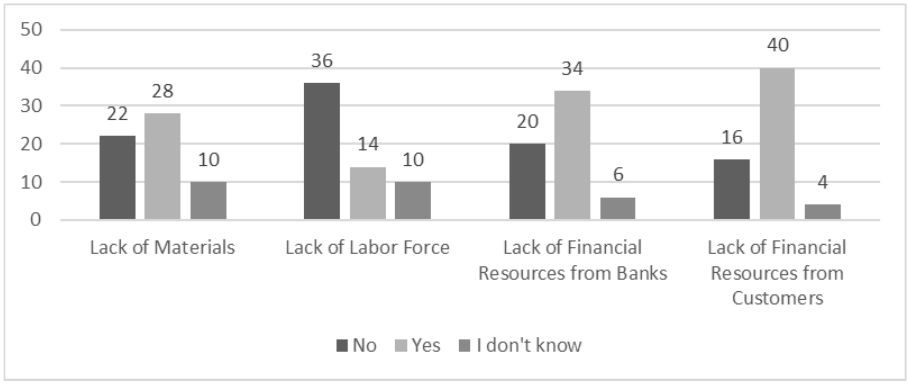

Fig. 5. Challenges During the previous Year

Only 16.7% strongly agree and 43.3% agree that after emerging the crisis sufficient anti-crisis directions are set and organization's actions are sequential and logical.

As for expectations for FY 2021, 40 respondents are optimistic about the increase of revenues and 44 are hoping to increase sales; only 26 interviewees are hopeful that expanded operations will require hiring more employees.

Fig. 6. Expected Changes in 2021

Notably, majority of respondents think that IT department successfully managed the process of quick shift to perform duties online; internal and external communications worked well.

Only third part of respondents sees the coordination of construction operations department with other departments as well-managed; same percentage thinks that the sales department improved strategy for increased volume of sales.

Organizational system framework model for sustainable development.

Conducted survey helped consolidate activities under the crisis life cycle. Revealed challenges before and during the crisis and planned recovery process provoked interest to develop one model with all appropriate areas of organizational activities. Further research provided information about existed theoretical findings and practices on different ways of unified approach to the development of overarching model of the organizations for efficient crisis management.

A common mistake in the process of developing resilient system for the organization is to look at individual elements of the organization in isolation from each other. Due to the erratic measures aiming either at improvement of strategy development, *or* operations, *or* improvements in communication, *or* adjustments in compensation system, *or* hiring criteria review *or* any other stand-alone sets of activities may not bring the organization to its desired results and success. In this case, the organization often lacks a systemic framework that shows leaders, other internal and external stakeholders the organization as a whole. Only agreed upon unified vision helps all interested parties avoid major challenges and threats and save the organization in times of both expected and unexpected crises.

A model of organizational system framework should include and reflect the key variables that affect an organization's performance, most desirably the leaders need to see measurable outcomes as part of the model.

Crisis management can be efficient if it covers various aspects, such as economic, political and legal-regulatory decisions. Organization's readiness for solving issues (before they turn into problems and then – crisis) depends on how flexibly it also addresses other aspects, such as social, technological, educational, cultural, psychological-ethical, environmental, technical, organizational, and managerial aspects.

We understand model as a system of rules of the game, as a set of guidelines and directions according to which crisis management should be best used for future continuous and sustainable development.

After carefully examining the existing models, the analysis of the study object was decided at the level of the constituent organizations of the construction sector, taking into account their micro- and macro-environment. The analysis was carried out with the help of a construction and development crisis management model and a recommendation system developed specifically for this purpose.

For a comprehensive analysis of the crisis life cycle, the cycle must be analyzed collectively, based on a system of criteria.

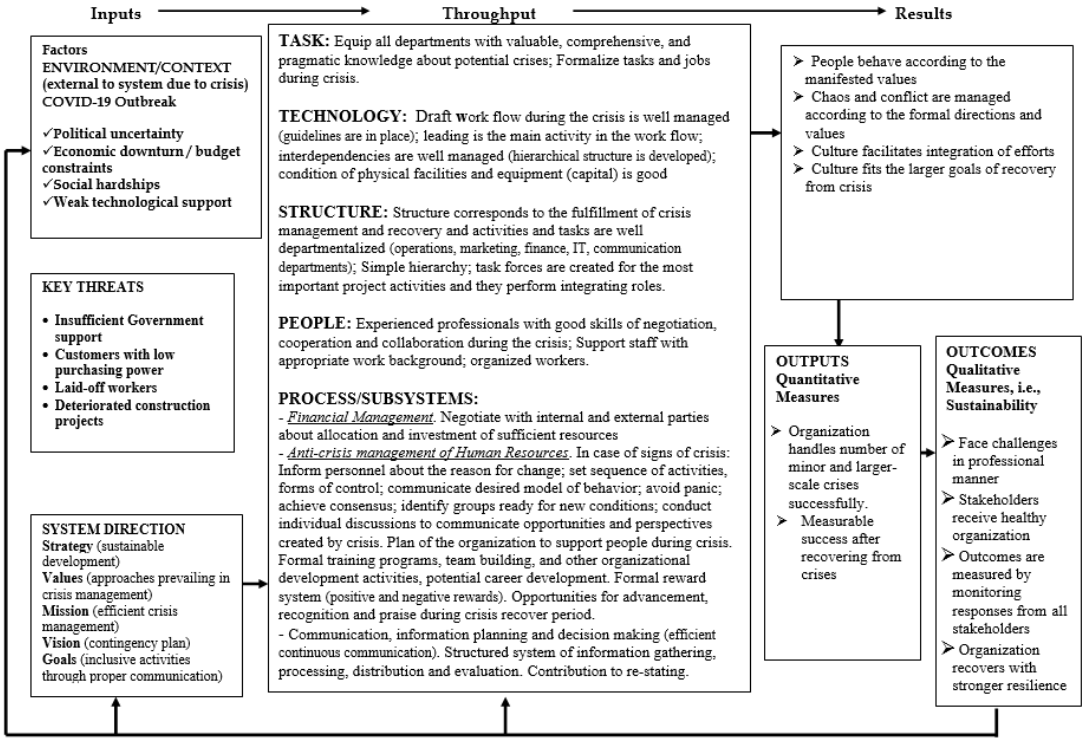

Fig. 7. Organizational System Framework Supporting to Efficient Crisis Management

This framework can be recommended for the construction projects for better resilience to potential crises.

Discussion. There was considerable doubt that organizations were lacking the clear strategy and contingency plan for unpredictable cases. Crisis caused by COVID-19 is unexpected and unprecedented in its scale. Interviews with managers of five departments of 12 construction companies proved the hypothesis that they were unprepared for the challenges emerged after the beginning of 2020. Strategies either did not exist or were outdated; contingency plans were last discussed long ago; in most cases, interdepartmental and external communications were not well established; and outcomes of the system organization were not focused on the crisis management.

Results. The selected method justified itself, because it revealed the most significant factors influencing the resilience of organizations during the crisis. Interview respondents indicated financial (due to the declined purchasing ability of the population, and additional barriers created by banks for getting loans) and communication factors as the most challenging during the crisis.

Strategy design, of even leading construction companies, does not always provide sufficient and appropriate directions for developing plans for rapid response to the crisis; ad-hoc decisions and statements prevail. Some construction projects interrupted and then re-started operations, some were not able to continue business at all.

As a result, based on the research all weaknesses of organizational system were concentrated, structured, and the model is elaborated as a project roadmap for crisis management.

Conclusions. The research follows initial methodology – reviews literature on crisis circumstances; provides information on the role of construction in the economic structure of Georgia; discusses key issues for consideration of employers and employees in the sector; introduces immediate measures taken by Georgian government to lessen the negative consequences of the unexpected crisis; studies and analyses organizational readiness of the construction companies during the ongoing crisis; and introduces Organizational System Framework Model for sustainable development of construction companies. The model is developed with the goal to accumulate all potential external and internal resources, lead the business processes based on the clear interdepartmental communication, cooperation and collaboration, thus creating the efficient organizational culture which, in turn, will bring the organization to desirable and measurable outputs and long-term sustainability as an outcome.

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MARKETING MANAGEMENT AND ITS FEATURES IN THE ORGANIC SPHERE OF PRODUCTION

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ABSTRACT

The article considers the definition of marketing and marketing management from the standpoint of various scientists. The main tasks of marketing of an enterprise are studied as an integral part of management of marketing activities. The necessity of marketing management is analyzed, and the advantages of its use are outlined. The concept of organic production is studied; an interpretation of marketing management of organic production is proposed, which includes the study of the needs of existing and potential consumers, the development of an appropriate product range, which will be based on the requirements for the production of organic products, taking into account the wishes of consumers, the sale of products by optimally selected sale channels, which will lead to the achievement of better competitive advantages and profit maximization.
The article also considers the general requirements for organic production in Ukraine, as well as the list of prohibitions for this production. The features of marketing management in the field of organic production are determined, which include: ensuring the absence of negative impact on the environment by production; compliance with the principles and requirements for the production of organic products; the presence of a transition period of production; the mandatory procedure for annual certification; the presence of special labeling of products, which is agreed with the certification body.

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Introduction. Marketing plays a key role in enterprise management. It makes it possible to study in advance the demand for existing products or those which are planned to be added to the range, to adapt production in accordance with changes in the external environment and to meet the needs of consumers as much as possible. The importance of the marketing management of organic production is twofold: on the one hand, it is about meeting the needs of consumers as much as possible, and on the other hand, it is about proving to consumers the usefulness of such products and convincing them to pay a premium price for them. Also, during production, it is necessary to take into account all the requirements for organic products and exclude negative impact on the external natural environment.

Analysis of recent research and publications. The study of marketing and marketing management was carried out by outstanding foreign scientists such as P. Kotler [1], K. L. Keller [1], P. Drucker [2], Z.-Z. Lamben [3]. Among the native scientists, the following should be highlighted: I. V. Yurko [4], K. M. Kraus [4], D. V. Rajko [5], V. H. Voronkova [6], T. V. Hryhorchuk [7], S. I. Chebotar [8], Ya. S. Larina [8], O. P. Lutsii [8], M. H. Shevchyk [8], R. I. Buriak [8], S. M. Boniar [8], A. V. Riabchyk [8], O. M. Prus [8], V. A. Rafalska [8], L. V. Balabanova [9], V. V. Kholod [9], I. V. Balabanova [9], L. M. Kurbatska [10], L. E. Lebedieva [11], I. V. Hvozdetska [12], I. P. Chaika [13], M. A. Konopliannykova [14], I. V. Boichuk [15], A. Ya. Dmytriv [15].

Marketing and its main provisions were studied by T. V. Hryhorchuk [7], S. I. Chebotar [8], Ya. S. Larina [8], O. P. Lutsii [8], M. H. Shevchyk [8], R. I. Buriak [8], S. M. Boniar [8], A. V. Riabchyk [8], O. M. Prus [8], V. A. Rafalska [8], L. V. Balabanova [9], V. V. Kholod [9], I. V. Balabanova [9]. I. V. Yurko and K. M. Kraus [4] investigated the evolution of the concept of «Marketing management». Management was considered by P. Drucker [2] and Z.-Z. Lamben [3]. Management of marketing was studied by P. Kotler [1], K. L. Keller [1], D. V. Rajko [5], L. M. Kurbatska [10], I. V. Hvozdetska [12], I. P. Chaika [13], M. A. Konopliannykova [14]. V. H. Voronkova [6] focused on the marketing of social services. D. V. Rajko [5], L. E. Lebedieva [11], I. V. Boichuk [15], A. Ya. Dmytriv [15] were engaged in a research of a marketing for an industrial enterprise. The specifics of marketing management of organic production require further study.

The purpose of the research is to define the concepts of marketing and marketing management, to determine its features in the field of organic production, to study the concept of organic production and to suggest a definition of marketing management of organic production, to consider the requirements and prohibitions of Ukrainian legislation in the field of organic production.

Research methods. When processing the materials, the following general scientific methods were used: comparison – while establishing patterns in the interpretation of the definitions of marketing, marketing management and organic production, definition – while formulating the term «marketing management of organic production», abstraction – while studying the requirements and prohibitions of organic production by Ukrainian legislation separately from the requirements of other countries, systematization – while summing up the features of marketing management of organic production. Among other special methods applied are historical and economic – while considering the definitions of marketing and marketing management in the process of developing economic science and the changing external environment, monographic – while studying the requirements and prohibitions of organic production of a particular country as an object of study.

Research results. Thanks to the development of a market economy and the expansion of supply, the consumer becomes more and more demanding. In order for him to choose the product you offer, it is necessary to meet his needs as much as possible. Marketing is useful to solve this problem.

According to the definition of P. Kotler and K. L. Keller, marketing is the identification and satisfaction of human and social needs [1, p. 28]. P. Drucker defines marketing as the concept of managing a firm, in the center of which is the buyer, the client with his needs and requests, and the entire company, its branches and sites are aimed at meeting these needs as much as possible [2]. Z.-Z. Lamben defines marketing as a social process aimed at satisfying the needs and desires of individuals and organizations by creating a free competitive exchange of goods and services that form value for the buyer [3, p. 36].

I. V. Yurko and K. M. Kraus consider the essence of marketing while studying comprehensively the market, demand, needs and preferences of consumers, actively influencing the market and existing demand, and studying the formation of customer preferences [4]. D. V. Rajko defines marketing as a set of elements of the marketing complex (forms and properties), as well as knowledge and skills of marketing personnel, which can be aimed at obtaining a strategic advantage over competitors in the market [5, p. 22].

According to V. H. Voronkova, marketing is a system of internal corporate management, which is aimed at identifying and taking into account the demand and requirements of the market for a more reasonable orientation of production activities of enterprises to create competitive types of products in pre-determined volumes and in accordance with certain technical and economic characteristics. The marketing philosophy is simple: the manufacturer should produce products that beforehand are guaranteed to be sold and the company will receive the planned level of profitability. Marketing should be considered as an integrative management function that aims to turn the needs of the consumer into the income of the manufacturer. Marketing in an enterprise is only a part of the management system (which guides, forms, but still it is a part), and if other functions are not performed such as management of a personnel, management of an operating system, etc., then marketing will be unnecessary [6].

Table. 1 provides an interpretation of marketing management from the point of view of various scientists.

Table 1. Definition of the marketing management

Kotler and Keller	Art and science of choosing target markets and getting, keeping and growing customers through creating, delivering, and communicating superior customer value.
Hryhorchuk	Analysis, planning, organization, motivation and control over the implementation of measures designed to establish, strengthen and support mutually beneficial exchanges with the target market to achieve a specific goal of the enterprise.
Chebotar, Larina, Lutsii, Shevchyk, Buriak, Boniar, Riabchyk, Prus, Rafalska	Identifying and meeting the needs of target markets in better ways than competitors and thus maximizing profit.
Yurko, Kraus	The systematic purposeful activity of the enterprise, including analysis, planning, implementation and control of actions aimed at ensuring a stable market position, research of demand and satisfaction of consumer demands, use of integrated methods of sales promotion, adaptation to dynamic changes in the marketing environment and, as a result, making a profit.
Balabanova, Kholod	Practical implementation of a carefully thought-out integrated policy of the enterprise in the market, which includes the organization, analysis, planning, implementation of measures aimed at achieving certain goals of the enterprise in the market and control; a set of measures that regulate the position of the enterprise in the market through marketing functions.
Kurbatska	The process of analysis, development and implementation of tools designed to establish, strengthen and maintain profitable exchanges with customers to achieve the main goal of the company – making a profit, sales growth, increase market share and more.
Rajko, Lebedieva	One of the management subsystems, the content of management functions which is determined by the specifics of both: the enterprise as a whole and the specifics of the marketing organization. The specificity of marketing is that it can't only be the responsibility of a group of professionals, it must cover, coordinate and direct the work of all departments and all specialists of the company to meet the needs and demands of consumers.
Hvozdetska	Comprehensive management of marketing activities of the enterprise, formed on the basis of socio-ethical marketing and aimed at studying the demand and needs of consumers, rapid response to changes in the marketing environment and ensuring long-term commercial success.
Chaika	The process of formation and direction of system marketing interaction of functional divisions of the enterprise on attraction, preservation and development of consumers, built on the principles of holism (decentralization of management, open decision-making, realization of freedom of each participant of the process, developed information communication in system).
Konopliannykova	Activities within the enterprise aimed at the market environment, which is based on the use of information technology, establishing constant communication with the consumer, allowing to increase the adaptability of marketing tools in accordance with market needs, and contribute to the goals of marketing activities.

Source: developed by the author based on data [1, 4, 7-14].

The main tasks of the company's marketing as an integral part of management:

- research of the needs of real and potential consumers of the company;
- marketing support for the development of new products and services of the company;
- analysis, evaluation and forecasting of the state and development of the markets in which the company operates or will operate, including research on the activities of competitors;
- formation of the range policy of a company;
- participation in the formation of the company's strategy and tactics of its market behavior, including the development of pricing policy;
- sales of the company's products and services;
- marketing communications, advertising activities;
- organization of the service;
- formation of proposals, recommendations, information support in the interests of all management functions and various branches of the enterprise's activity, etc. [6].

Consumers dictate the product requirements which lead to the use of most optimal management structures, a combination of centralized and decentralized forms in management, more

complete consideration of consumer requirements in the production program, increased competitiveness, implementation of a program-target approach to the development and adoption of managerial decisions. Implementation of marketing activities acts as an objective necessity of orientation of scientific, technical, production and sales activities of an enterprise (company) to take into account market demand. Marketing activities of the company are aimed at establishing specific current and, mainly, long-term goals, ways to achieve them based on the demand of the market, as well as determine the real sources of economic activity, the range and quality of products, the optimal production structure and expected profit [6].

The main tasks of marketing activity management are [8]:

- formation and improvement of organizational structures for managing marketing activities at the enterprise;
- determining the company's goals and ways to achieve the marketing activity in terms of return on investment (break-even point); making a profit; entering new domestic and foreign markets; increasing the company's market share;
- introduction of new and / or modified products to the market etc.;
- organization and conduct of marketing research (consumer behavior, market conditions, competition and competitors, market opportunities of the enterprise, etc.);
- formation of a marketing strategy, which is a general plan for achieving marketing goals, and includes: market segmentation (identification of individual consumer groups); selection of target markets (determination of target segments to which the enterprise will focus its activities); positioning of goods in the market (the place of your goods among competitors' goods); identification of the best performing companies of competitors for comparison; identification of competitive advantages of the enterprise in the market;
- development and implementation of marketing programs related to making managerial decisions for each of the «4p» of the marketing – product, price, place, promotion;
- creation and improvement of the mechanism of functioning of marketing activities in the company;
- development and implementation of a marketing plan.

The advantages of implementing marketing management are shown in Fig. 1.

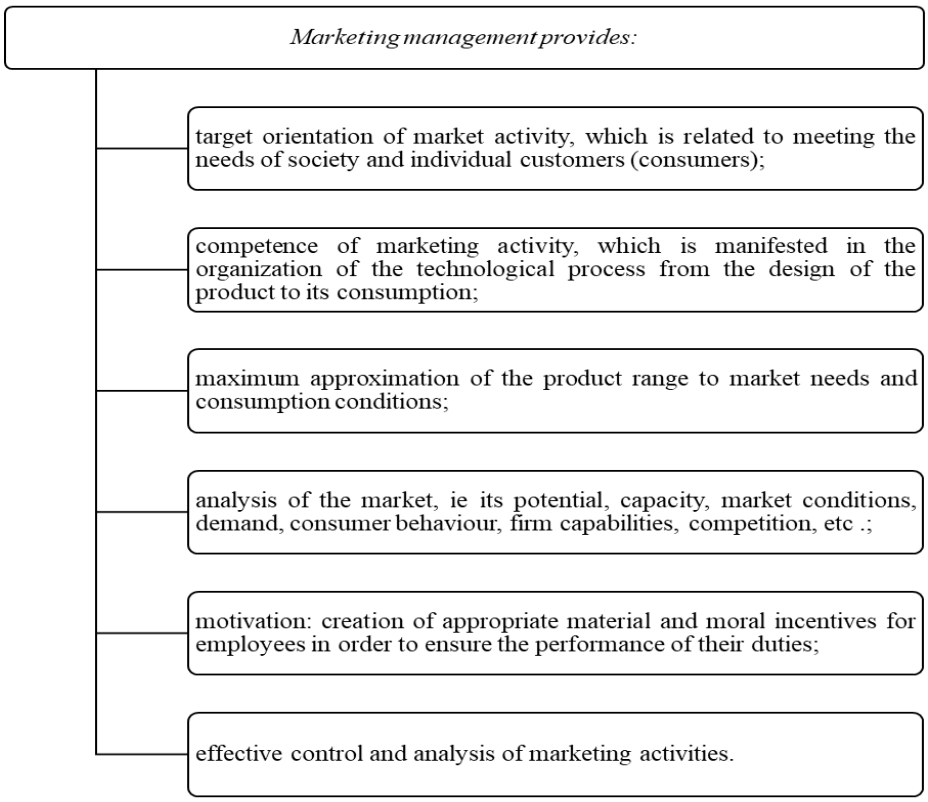

Fig. 1. The advantages of implementing marketing management
Source: developed by the author based on data [15].

Marketing also plays an important role in the development of the organic sphere. Ukraine is included in the list of developing countries, which is in particular triggered by low social payments and by the low purchasing power of the majority of the population. This is one of the main factors that constrains the demand for organic products within the country and contributes to their sale abroad, often in the form of raw materials for the subsequent production of finished products.

The second factor is the consumer's lack of awareness about the benefits of organic products. The third factor is the presence of pseudo-organic products, when illegally (without any real grounds) the terms such as «Bio», «Organic», «Natural», «Environmental» are used by fraudulent companies. The manufacturer needs not only to distinguish its products from the competitor's, but also to convince the consumer of their safety and usefulness to encourage them to pay a premium price for the product. This is where the marketing management comes in handy.

For a better understanding let's consider the definitions of organic production introduced by various international organizations in the relevant documents in Table. 2.

Table 2. Definitions of organic production

FAO	Holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasises the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials, to fulfil any specific function within the system.
IFOAM	Production system that sustains the health of soils, ecosystems, and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic Agriculture combines tradition, innovation, and science to benefit the shared environment and promote fair relationships and good quality of life for all involved.
USDA	Ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain and enhance ecological harmony.
The Law of Ukraine «About the basic principles and requirements for organic production, circulation and labeling of organic products»	Certified activities related to the production of agricultural products, including all stages of the technological process, namely primary production (including harvesting), preparation, processing, mixing and related procedures, filling, packaging, processing, recovery, and other changes in the state of production), which is carried out in compliance with the requirements of the legislation in the field of organic production, circulation, and labelling of organic products.
Council Regulation (EC)	Overall system of farm management and food production that combines best environmental practices, a high level of biodiversity, the preservation of natural resources, the application of high animal welfare standards and a production method in line with the preference of certain consumers for products produced using natural substances and processes.

Source: developed by the author based on data [16-20].

Considering the above, I believe that marketing management of organic production is the study of the needs of existing and potential consumers, the development of an appropriate product range, which is based on the requirements for the production of organic products, on the wishes of consumers, on the sale of products by optimally selected sales channels, which will lead to the achievement of better competitive advantages and profit maximization.

General requirements for organic production are (fig. 2):

✓ separation in time or space of production and storage of organic products, considering accounting for such products, from the production and storage of inorganic products and products of the transition period;

✓ use of technologies that meet the requirements of legislation in the field of organic production, circulation and labeling of organic products;

✓ use of mainly renewable resources and own resources, including processed waste products and by-products of plant and animal origin, provided that they meet the requirements for organic production;

✓ use of technologies that do not harm human health, plants, and animal welfare, prevent or minimize environmental pollution;

✓ use of food additives, trace elements and additives for technological purposes in the maximum permissible quantities determined by the legislation in the field of organic production, turnover and labeling of organic products;

✓ use of water as an ingredient of organic products that meets the requirements established by law for drinking water;

✓ prohibition of mixing the organic and inorganic ingredients in the same organic product [19].

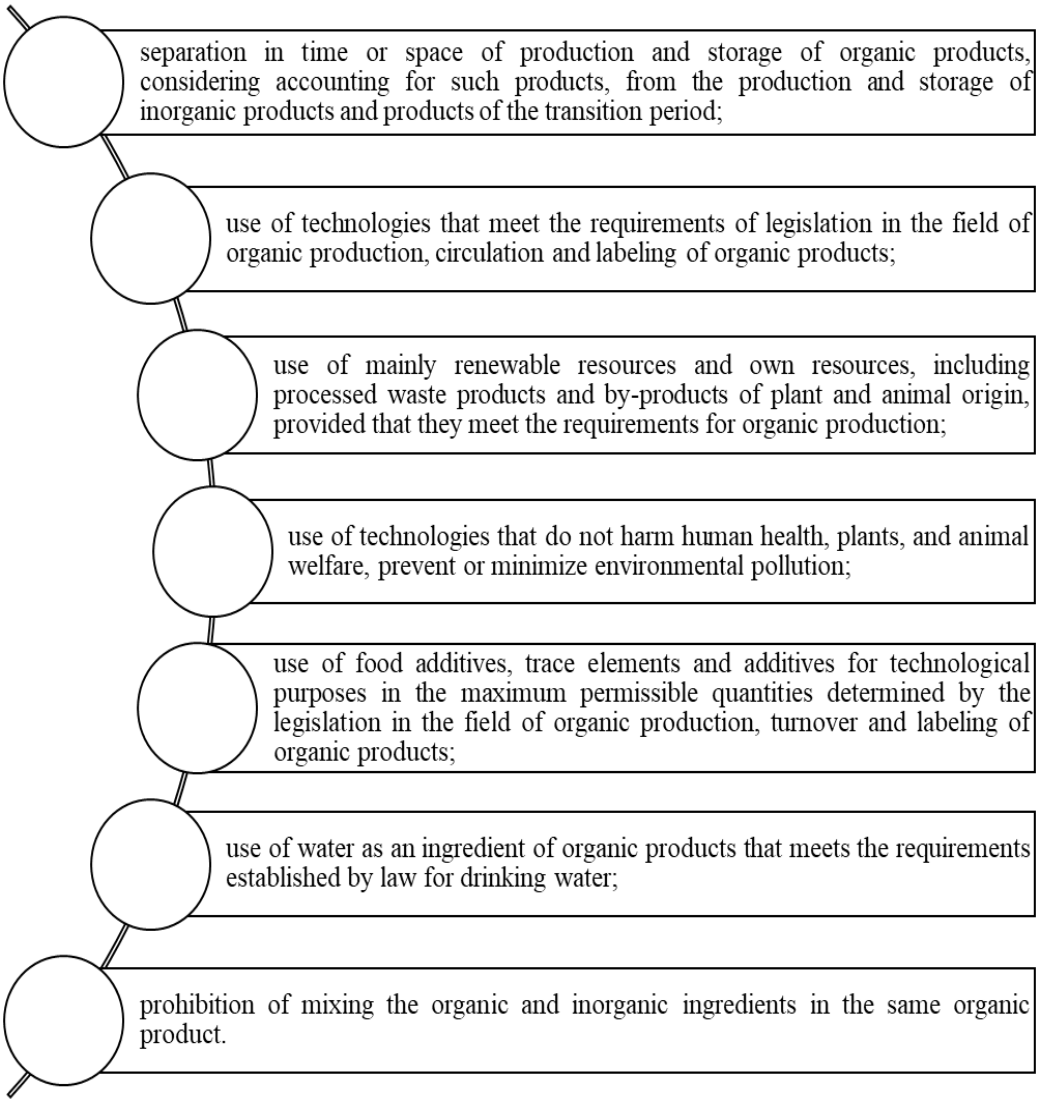

Fig. 2. General requirements for organic production
Source: developed by the author based on data [19].

In the process of organic production, it is prohibited to use:

× any unnatural or uncontrolled influence on the genome of agricultural plants and animals (including poultry and insects), industrial microorganisms through the use for the production of genetically modified organisms and products containing, consisting or produced from genetically modified organisms, except for the use of veterinary medicines included in the list of substances (ingredients, components), which are allowed to be used in the process of organic production and which are allowed to be used in maximum permissible quantities, in cases established by law;

× synthetic substances, including agrochemicals, pesticides, antibiotics for preventive purposes, hormonal drugs, growth stimulants and feeding of animals (including poultry and insects);

- methods of electrical or other stimulation which induce pain in animals, the use of tranquilizers;
- ionizing radiation;
- other hydroponic methods;
- use of artificially bred polyploid animals and plants;
- substances and technological methods of production, the results of which may mislead the consumer about the nature (origin) of the product;
- growth stimulants, hormones or similar substances, except for the use of substances included in the list of substances (ingredients, components) that are allowed to be used in the process of organic production and that are allowed to be used in maximum permissible quantities, in cases established by law [19].

Features of marketing management in organic production are:

1) ensuring that there is no negative impact on the environment by production;
2) compliance with the principles and requirements for the production of organic products in the relevant industry;
3) availability of a transition period for the production;
4) mandatory annual certification procedure;
5) availability of special product labeling, which is made in accordance with the certification body.

Organic production involves the use of only organic fertilizers, farming on non-polluted land plots, maintaining a balance in crop rotations, as well as mandatory cultivation of legumes that enrich the land with nodule bacteria. Organic animal husbandry provides for free range of animals, providing them with close to natural living conditions, as well as the use of biological preparations and, consequently, the prohibition of antibiotics. The requirements for organic production allow the producer to reduce the cost of mineral fertilizers, plant protection products, and fuel, since only surface tillage is allowed.

Conclusions. Marketing management is an important aspect of the functioning and development of an enterprise. Organic production is not an exception, but rather the opposite. Marketing management of organic production is defined as a set of measures to study the needs of existing and potential consumers, develop an appropriate product range, which is based on the requirements for the production of organic products and on the wishes of consumers, sell products through optimally selected sales channels, which will lead to achieving better competitive advantages and maximizing profits.

The features of marketing management of organic production include the following: ensuring the absence of negative impact on the environment by production; compliance with the principles and requirements for the production of organic products in the relevant industry; the presence of a transition period for the production; mandatory procedure for annual certification; the presence of special labeling of products, which is made in accordance with the certification body.

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SUSTAINABILITY OF THE COMPETITIVE POSITION OF AGRICULTURAL ENTERPRISE: EVALUATION AND FORECASTING OF POSSIBLE SCENARIOS

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ABSTRACT

The article is devoted to the study of the problem of assessing and forecasting the stability of competitive positions of agricultural enterprises. The analysis of theoretical approaches to the definition of the studied categories is carried out. Based on the essence of the competitive position, a methodical approach to assessing the competitive position of an agricultural enterprise is substantiated: a method of comparing the rate of change of the main economic indicators of an agricultural enterprise and the industry as a whole is proposed. The article calculates the forecast values of the integrated stability index of the competitive position and its components using the method of exponential smoothing using the Brown-Mayer model, which allowed to assess the dynamics and trends of agricultural enterprise. A model is proposed, which can not only assess the level of competitive position of the enterprise, but also identify areas of change in the level of competitive position of the enterprise as a whole and in terms of individual components, develop conceptual frameworks for effective management decisions.

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Introduction. Today, the agricultural sector operates in conditions of instability of the national economy. All this creates additional risks for the activities of economic entities. Enterprises need to properly assess the market environment and their ability to ensure the required level of competitiveness. This is possible when determining the position of the company among all its competitors. In this regard, the question of finding ways and methods to ensure the stability of the competitive position become especially relevant.

Analyses of latest researches and publications. A significant contribution to the study of competitiveness, evaluation and search for ways to ensure the stability of competitive positions was made by scientists: G. Azoev, J. Barney, B. Wernerfelt., R. Grant, A. Mugera, G. Hamel, M. Porter, C. Prahalad, B. Timilsina. Ukrainian scientists have also dealt with this problem, in particular: L. Kviatkovska, P. Kulinichev, Yu. Ivanov, H. Seleznova, O. Shnypko, O. Trydid, S. Filyppova, S. Cherkasova. Peculiarities of the formation of stable competitive positions of the agricultural sector are reflected in the works: V. Hranovskoi, O. Nykoliuk, M. Malika, V. Mesel-Veseliaka, P. Sabluka, O. Shpychaka.

Forming the purpose of the article. Scientists have studied the problems of achieving and maintaining competitive positions of enterprises in conditions of turbulence. However, the question of choosing the tools for assessing and forecasting the stability of the competitive position of agricultural enterprises requires in-depth study. The purpose of the article is to deepen scientific and methodological approaches and develop practical recommendations for assessing and forecasting possible scenarios for changes in the stability of competitive positions.

Literature Review. Attention to the problem of ensuring competitive advantages, as the basis for the formation of sustainable competitive positions, is increasing and acquiring new features of research, it should be especially noted that research is focused on such a sign of competitive advantages as sustainability [1-4]. Maintaining a competitive position indicates the ability of an enterprise to respond in a timely manner to a rapidly changing market environment. It is the stable competitive positions and advantages that ensure the victory of the enterprise in the competitive struggle. [5]. Azoev G.L. competitive position refers to the position that a firm occupies in a particular area according to performance compared to competitors [6]. Competitive position of the enterprise - the place of the enterprise in specific segments of the external market in relation to competitors [7]. Thus, R. Rumelt notes: «The competitive position reflects the competitive advantages that the company possesses in the industry» [8]. A.A. Thompson and A.J. Strickland define the competitive position of the company as one of the stages in the study of competition in the industry. The competitive position of a company is a fixed position of a company relative to its competitors at a certain point in time. Being a relative value, the competitive position is always comparable both quantitatively and qualitatively [8]. Competitive position is defined as a complex characteristic of the state of an enterprise in a competitive environment, which is formed due to the existence of competitive relations; it is a set of controlled dynamic factors that constantly affect the viability of an enterprise and determine the stability of its position in the market [9]. The stability of the competitive positions of companies is understood as the preservation and reproducibility of the parameters of the qualitative and quantitative determination of these positions within a fixed period of time. The need to maintain competitive positions makes it important to ensure the sustainability of these positions [10]. A stable competitive position is the ability to maintain the intended competitive position in the market, ensure a stable high level of competitiveness and effectively adapt to changes in environmental factors that the enterprise cannot influence [5]. The stability of the competitive position is the ability of an enterprise to maintain a competitive position over a long period of its functioning when the factors of the internal and external environment change. The most important factor in the formation of a stable competitive position is to ensure competitive advantages. It is the presence of competitive advantages that enables an enterprise to have a better competitive position for a certain time in comparison with its competitors. The competitive position of a subject is its place in specific segments of the external environment market in relation to competitors [7].

Consequently, in order to ensure the competitive and sustainable development of an enterprise, to ensure its viability, such a characteristic of the competitive position as stability is important. Sustainable competitive position is a way of expressing the competitive potential of an enterprise and the ability of an enterprise to quickly adapt to rapid changes from outside the enterprise and to stay ahead of its competitors.

Ensuring a stable competitive position is carried out under the influence of many factors, the identification and analysis of which will determine the further strategic directions of the enterprise. Factors to ensure a stable competitive position are the conditions that are necessary for the enterprise to provide sustainable competitive advantages, which, other unchanged conditions, will allow it to maintain a competitive position in the market [11]. Regarding the factors of sustainable competitive advantages in the scientific literature, there are two opposite concepts: the resource-based concept of sustainable competitive advantages [1; 2] and models based on the study of the influence of the external environment on the competitive position of the firm [12]. According to M. Porter [12], the competitive position of a firm depends on the specifics of the industry to which it belongs. He assumed that resources in one industry are identical, and their heterogeneity is a temporary phenomenon. According to Porter, the basic components of competitive advantages are specialized types of activities. The existence of barriers, even with resource homogeneity, according to Porter, provides an opportunity for a firm to gain a competitive advantage. Critics of this concept, the founders of the resource approach [1-4; 13; 14], believe that it does not pay enough attention to the influence of internal characteristics on the competitive advantages of a firm. From the point of view of supporters of the resource approach, the source of sustainable competitive advantage is resources that are endowed with a certain set of features, such as scarcity, immobility and uniqueness. It is important to achieve a balance between the exploitation of existing resources and the development of new ones [14]. According to Prahalad and Hamel [3], who expanded the resource theory, the production of a unique product is determined by new knowledge that arises as a result of an effective combination of

available resources, knowledge and processes. It is the competencies that will ensure the adaptation of the company to changing market conditions and the compliance of internal and external conditions. High adaptability is closely related to the continuous process of obtaining and producing new knowledge [3]. The main assumption of RBV is that the firm competes in the market on the basis of its resources and capabilities to achieve certain characteristics. Resources are what an organization can use to achieve its goals. Opportunities are the firm's ability to use its resources to create the products it wants. The firm competes and changes its competitive environment in the amount of its resources and capabilities. This means that the choice of resources and operational decisions play an important role in the work of the firm to achieve a stable competitive position [15].

Thus, the resource potential can be a factor of stable competitive position and a source of differences between firms, as evidenced by the fact that in the same conditions of operation within one industry enterprises provide different results.

Methodology. To achieve this goal, the following methods of scientific research were used: *methods of scientific generalization* (when studying existing approaches to determining the essence of the category «stability of a competitive position»); *statistical methods of multivariate analysis* (when studying the dynamics and trends of changes in indicators of stability of a competitive position, when developing a model for diagnosing a competitive the position of the enterprise in the context of the industry). When analyzing the strategic priorities for ensuring the sustainability of the competitive position of the studied enterprise, *forecasting methods and a scenario approach* were applied.

Research results. For effective management and development of measures to ensure a sustainable competitive position, a reliable assessment of its level and its sustainability is needed. Given the multifaceted nature of such a complex category as a competitive position, it becomes necessary to analyze in detail its actual level and the factors to ensure its stability. Therefore, a correctly chosen methodology for assessing the stability of the competitive position of an enterprise will determine how it can strengthen its position in the market environment. Analysis of literary sources showed that there is no single assessment methodology. Each of the proposed methods has both advantages and disadvantages. The assessment of the competitive position of an agricultural enterprise should be carried out by adapting and modifying existing methodological approaches to the conditions of the agricultural industry. As the analysis has shown, there is no consensus among scientists about which indicators should be taken as a basis for assessing the competitive position of an enterprise. [6;7;9;16-23].

In our opinion, the analysis of the competitive position involves an integral assessment using the indices of changes in individual indicators in comparing the average industry values and the enterprise [21]. The model for assessing the competitive position of an enterprise is based on the use of an assessment of the competitive potential of an enterprise and is implemented in determining the available resources of the enterprise, assessing the efficiency of using the resources of the enterprise and determining the level of its market advantages in relation to enterprises operating in the same industry [22].

Thus, it is advisable to represent the competitive position assessment model in the form of a function (1):

$$CPc = f\,(LP;\ PL;\ EP;\ CP;\ MA), \tag{1}$$

CPc – current competitive position;
LP – competitive position on the level of production;
PL – competitive position in labor productivity;
EP – competitive position on production efficiency;
CP – competitive position in production costs;
MA – competitive position in terms of market advantages.

The CPc index is an integral numerical characteristic. The greater its value, the higher the level of competitive position of the enterprise in the current period. The obtained results can be the basis for increasing the level of competitive position of the enterprise. It should be noted that the number of indicators should be optimal, since the use of a large number of indicators complicates the calculations. The parameters we selected were brought to a dimensionless form and partial indices were calculated. We have identified the following indices: production level index (I_{LP}), labor productivity level index (I_{PL}), production efficiency index (I_{EP}), production cost index (I_{CP}) and market advantage level index (I_{MA}). After calculating the indices, the integrated index of the level of the competitive position of the enterprise was calculated as the geometric mean of the product of the above indices (formula 2).

$$I_{CPc} = \sqrt[5]{I_{LP} * I_{PL} * I_{EP} * I_{CP} * I_{MA}}, \quad (2)$$

I_{CPc} – integral index of the level of competitive position of the enterprise;
I_{LP} – production level index;
I_{PL} – labor productivity level index;
I_{EP} – production efficiency index;
I_{CP} – production cost index;
I_{MA} – market advantage level index.

The proposed model was tested on the example of one of the agricultural enterprises of Ukraine. Relevant indices for the period 2014-2019 were calculated. The results are shown in table 1.

Table1. Dynamics of the integral index of the level of the competitive position of an agricultural enterprise

Indicators	Years					
	2014	2015	2016	2017	2018	2019
Production level index	0,91	0,88	0,98	0,90	0,79	0,68
Production efficiency index	5,16	1,86	0,40	2,55	0,23	1,27
Labor productivity level index	0,85	0,80	0,62	0,65	0,69	0,56
Production cost index	1,11	1,69	0,81	0,54	0,91	1,22
Market advantage level index	1,04	1,03	1,02	1,04	1,09	0,89
Integral index of the level of competitive position of the enterprise	**1,81**	**1,25**	**0,76**	**1,14**	**0,74**	**0,92**

Source: author's development

The agricultural enterprise does not have sufficient competitive advantages and has been losing its competitive position over the past 4 years (with the exception of 2017). The analysis revealed low competitive positions of the enterprise in some indicators (high cost, insufficient selling price) and quality parameters. A graphic representation of the dynamics of the components of the integral index of the level of the competitive position of the enterprise is shown in Fig. 1.

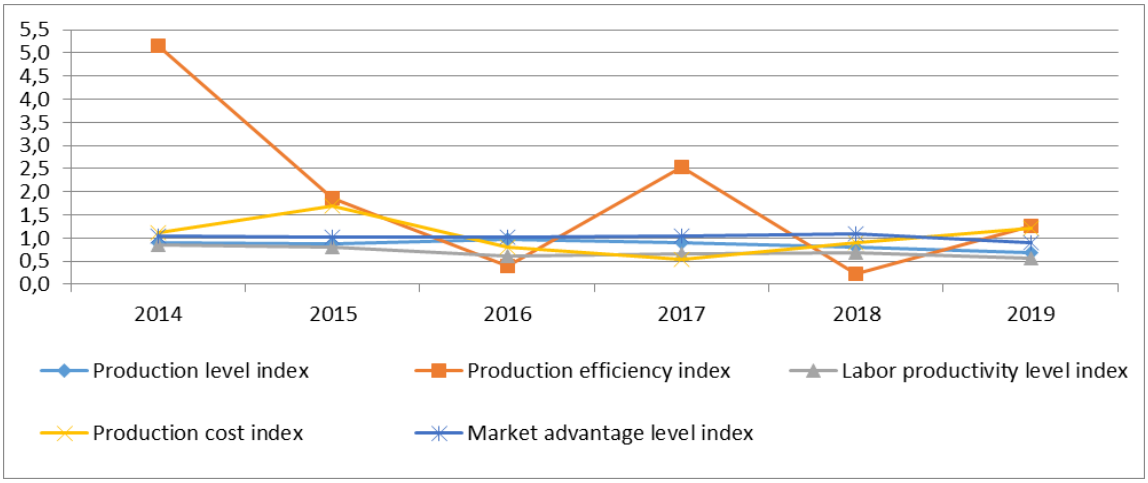


Fig. 1. Dynamics and trends of the components of the integral index of the competitive position of an agricultural enterprise
** Source: author's development according to the State Statistics Service of Ukraine and the annual reporting of the enterprise [24-29]*

In 2014, the production efficiency index had the largest contribution to the overall level of competitive advantages, however, in subsequent years, its negative dynamics began to be observed, and already in 2018, this index was the largest, but negative, impact on the competitive advantage index. The assessment revealed a low level of efficiency in the use of resources at the disposal of the enterprise. In the aggregate, the multiplicative effect of the investigated factors indicates a low and

insufficient level of management and forms an insufficient level of competitive advantages. The generalization of the results of diagnostics of the forming factors of competitive positions on the basis of the assessment made it possible to conclude that their level is insufficient. The study of the constituent elements showed that the enterprise does not fully use its existing competitive potential.

To assess the stability of the competitive positions of an enterprise, we consider it necessary to take into account not so much the absolute values of certain indicators, or their comparison with competitors (industry-average), but the dynamic trends of changes in the corresponding indicators in comparison with each other. In our opinion, the analysis of the competitive position should provide for an integral assessment using indices of changes in individual indicators in comparing the indicators of the enterprise and the industry average values. An analysis was carried out for 2014-2019. For the aforementioned indicators, with the values for 2014 taken as the basis (index = 1.00). The values of the corresponding indices for subsequent years were determined as the ratio of the absolute values of a given year to the value of the indicator for the previous year. The last stage in assessing the sustainability of the competitive position of an enterprise is the calculation of the corresponding coefficient, which is defined as the ratio of the integral index of changes in the enterprise's competitive advantages to the industry average integral index. Relevant indices for the period of 2014-2019 of the agricultural enterprise and for Ukraine as a whole were calculated (Table 2).

Table 2. Dynamics of the index of sustainability of the competitive position of an agricultural enterprise and the agricultural sector of Ukraine for 2014-2019.

Indicators		Years					
		2014	2015	2016	2017	2018	2019
Production level index	Agricultural enterprise	1,00	0,91	1,10	1,02	1,24	1,09
	Ukraine	1,00	0,94	1,03	1,02	1,43	1,45
Labor productivity level index	Agricultural enterprise	1,00	0,93	0,89	0,92	1,12	0,98
	Ukraine	1,00	0,98	1,21	1,19	1,38	1,47
Production efficiency index	Agricultural enterprise	1,00	1,70	0,33	1,85	0,16	1,15
	Ukraine	1,00	4,72	4,32	3,75	3,57	4,71
Production cost index	Agricultural enterprise	1,00	0,79	0,44	0,32	0,40	0,42
	Ukraine	1,00	0,70	0,61	0,58	0,54	0,42
Market advantage level index	Agricultural enterprise	1,00	1,52	1,68	2,06	2,29	2,05
	Ukraine	1,00	1,47	1,71	2,04	2,14	2,38
Integral index of stability of a competitive position	Agricultural enterprise	**1,00**	**1,12**	**0,75**	**1,03**	**0,73**	**1,01**
	Ukraine	**1,00**	**1,35**	**1,41**	**1,40**	**1,52**	**1,59**

** Source: author's development according to the State Statistics Service of Ukraine and the annual reporting of the enterprise [24-29]*

Thus, the assessment of the stability of the competitive position of the company for 2014-2019 showed that it tends to decrease. Only in 2017 and 2019 there was some improvement, but it could not change the general trend. This indicates the need for the company's management to take the necessary measures to improve product quality, production levels and reduce costs.

When making management decisions, it is mandatory to forecast the level of stability of the competitive position in the future. Without forecasting, without presenting the future trajectory of events and the influence of internal and external factors, it is impossible to make an effective management decision to ensure the stability of the competitive position. The development of a forecast of the stability of the competitive position of an agricultural enterprise is based on an integral assessment using indices of changes in individual indicators in comparison with the industry average values and indicators of the enterprise.

The following method was used to determine the predicted values of the above indices. First, the values of the initial indicators for the calculation of indices were predicted – the corresponding indicators for the enterprise and Ukraine by applying the economic-mathematical function of Brown-Mayer on the basis of a parabola of the second order [30]. As a result of regression analysis, the appropriate analytical dependences for each index were identified, which make it possible to predict the value of a particular indicator. The results of the statistical analysis of the dependence of the index of the level of production by enterprise on the index of the forecast value are shown in table 3.

Table 3. The results of statistical analysis of the dependence of the index of the level of production of agricultural enterprises from the index of forecast value

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	1,0719	0,0790	13,5593	0,0009	0,8203	1,3234
X Variable 1	0,0298	0,0211	1,4110	0,2531	-0,0374	0,0970
X Variable 2	-0,0025	0,0138	-0,1813	0,8677	-0,0465	0,0415

$$I_{LP_t}^{E} = 1{,}0719 + 0{,}0298 \cdot t - 0{,}0025 \cdot t^2 \quad (3)$$

$$I_{LP_{t+l}}^{E} = 1{,}0831 + 0{,}0144 \cdot l + \frac{1}{2} \cdot 0{,}0001 \cdot l^2 \quad (4)$$

The results of the statistical analysis of the dependence of the index of the level of production in Ukraine on the index of the forecast value are given in table 4.

Table 4. The results of statistical analysis of the dependence of the index of the level of production in Ukraine on the index of forecast value

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	1,0367	0,0781	13,2683	0,0009	0,7881	1,2854
X Variable 1	0,0825	0,0209	3,9511	0,0289	0,0161	0,1490
X Variable 2	0,0232	0,0137	1,6947	0,1887	-0,0203	0,0667

$$I_{LP_t}^{U} = 1{,}0367 + 0{,}0825 \cdot t + 0{,}0232 \cdot t^2 \quad (5)$$

$$I_{LP_{t+l}}^{U} = 1{,}3976 + 0{,}0123 \cdot l + \frac{1}{2} \cdot 0{,}0019 \cdot l^2 \quad (6)$$

The results of the statistical analysis of the dependence of the index of labor productivity on the agricultural enterprise on the index of the forecast value are given in table 5.

Table 5. The results of statistical analysis of the dependence of the index of labor productivity of agricultural enterprises from the index of forecast value

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	0,9315	0,0645	14,4522	0,0007	0,7264	1,1367
X Variable 1	0,0118	0,0172	0,6839	0,5431	-0,0430	0,0666
X Variable 2	0,0087	0,0113	0,7678	0,4985	-0,0272	0,0445

$$I_{PL_t}^{E} = 0{,}9315 + 0{,}0118 \cdot t + 0{,}0087 \cdot t^2 \quad (7)$$

$$I_{PL_{t+l}}^{E} = 0{,}9946 - 0{,}0082 \cdot l - \frac{1}{2} \cdot 0{,}0007 \cdot l^2 \quad (8)$$

The results of the statistical analysis of the dependence of the labor productivity index on the index of forecast value from Ukraine are given in table 6.

Table 6. The results of statistical analysis of the dependence of the labor productivity index on the index of Ukraine of the forecast value

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	1,1815	0,0577	20,4704	0,0003	0,9978	1,3651
X Variable 1	0,0777	0,0154	5,0352	0,0151	0,0286	0,1268
X Variable 2	0,0048	0,0101	0,4764	0,6663	-0,0273	0,0369

$$I_{PL_t}^{U} = 1{,}1815 + 0{,}0777 \cdot t + 0{,}0048 \cdot t^2 \quad (9)$$

$$I_{PL_{t+l}}^{U} = 1{,}3971 + 0{,}0338 \cdot l + \frac{1}{2} \cdot 0{,}0026 \cdot l^2 \quad (10)$$

The results of the statistical analysis of the dependence of the index of production efficiency of agricultural enterprises on the index of forecast value are shown in table 7.

Table 7. The results of statistical analysis of the dependence of the index of production efficiency of agricultural enterprises on the index of forecast value

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	1,0242	0,6247	1,6395	0,1996	-0,9640	3,0125
X Variable 1	-0,0391	0,1670	-0,2339	0,8301	-0,5704	0,4923
X Variable 2	0,0016	0,1093	0,0144	0,9894	-0,3463	0,3494

$$I_{EP_t}^{E} = 1{,}0242 - 0{,}0391 \cdot t + 0{,}0016 \cdot t^2 \quad (11)$$

$$I_{EP_{t+l}}^{E} = 1{,}0893 - 0{,}0069 \cdot l + \frac{1}{2} \cdot 0{,}0024 \cdot l^2 \quad (12)$$

The results of statistical analysis of the dependence of the index of production efficiency in Ukraine on the index of forecast value are shown in table 8.

Table 8. The results of statistical analysis of the dependence of the index of production efficiency in Ukraine on the index of forecast value

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	4,4214	0,9711	4,5529	0,0199	1,3309	7,5120
X Variable 1	0,3167	0,2595	1,1390	0,3374	-0,5304	1,1216
X Variable 2	-0,1589	0,1699	-0,9352	0,4187	-0,6996	0,3818

$$I_{EP_t}^{U} = 4{,}4214 + 0{,}3167 \cdot t - 0{,}1589 \cdot t^2 \quad (13)$$

$$I_{EP_{t+l}}^{U} = 4{,}1108 + 0{,}3773 \cdot l + \frac{1}{2} \cdot 0{,}0223 \cdot l^2 \quad (14)$$

The results of the statistical analysis of the dependence of the inverse index of production costs on the agricultural enterprise on the index of the forecast value are shown in table 9.

Table 9. The results of statistical analysis of the dependence of the inverse index of production costs for agricultural enterprises from the index of forecast value

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	0,3738	0,0487	7,6743	0,0046	0,2188	0,5289
X Variable 1	-0,0937	0,0130	-7,1979	0,0055	-0,1351	-0,0523
X Variable 2	0,0400	0,0085	4,6912	0,0183	0,0129	0,0671

$$I_{CP_t}^{E} = 0{,}3738 - 0{,}0937 \cdot t + 0{,}0400 \cdot t^2 \quad (15)$$

$$I_{CP_{t+l}}^{E} = 0{,}5133 - 0{,}0936 \cdot l - \frac{1}{2} \cdot 0{,}0034 \cdot l^2 \quad (16)$$

The results of the statistical analysis of the dependence of the inverse index of production costs in Ukraine on the index of the forecast value are shown in table 10.

Table 10. The results of statistical analysis of the dependence of the inverse index of production costs in Ukraine from the index of forecast value

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	0,5766	0,0646	8,9235	0,0030	0,3710	0,7822
X Variable 1	-0,0744	0,0173	-4,3090	0,0230	-0,1294	-0,0195
X Variable 2	0,0145	0,0113	1,2833	0,2895	-0,0215	0,0505

$$I_{CP_t}^{U} = 0{,}5766 - 0{,}0744 \cdot t + 0{,}0145 \cdot t^2 \quad (17)$$

$$I_{CP_{t+l}}^{U} = 0{,}5120 - 0{,}0571 \cdot l - \frac{1}{2} \cdot 0{,}0033 \cdot l^2 \quad (18)$$

The results of the statistical analysis of the dependence of the index of market advantages on the agricultural enterprise on the index of forecast value are given in table 11.

Table 11. The results of statistical analysis of the dependence of the index of market preferences for agricultural enterprises from the index of forecast value

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	1,9799	0,0782	25,3117	0,0001	1,7310	2,2288
X Variable 1	0,1806	0,0209	8,6406	0,0033	0,1141	0,2472
X Variable 2	-0,0462	0,0137	-3,3791	0,0431	-0,0898	-0,0027

$$I_{MA_t}^{E} = 1{,}9799 + 0{,}1806 \cdot t - 0{,}0462 \cdot t^2 \quad (19)$$

$$I_{MA_{t+l}}^{E} = 1{,}9195 + 0{,}1384 \cdot l + \frac{1}{2} \cdot 0{,}0047 \cdot l^2 \quad (20)$$

The results of the statistical analysis of the dependence of the index of market advantages in Ukraine on the index of forecast value are given in table 12.

Table 12. The results of statistical analysis of the dependence of the index of market preferences in Ukraine on the index of forecast value

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	1,9102	0,0563	33,9555	0,0001	1,7312	2,0892
X Variable 1	0,2020	0,0150	13,4329	0,0009	0,1541	0,2498
X Variable 2	-0,0271	0,0098	-2,7516	0,0706	-0,0584	0,0042

$$I_{MA_t}^{U} = 1{,}9102 + 0{,}2020 \cdot t - 0{,}0271 \cdot t^2 \quad (21)$$

$$I_{MA_{t+l}}^{U} = 2{,}1340 + 0{,}1345 \cdot l + \frac{1}{2} \cdot 0{,}0072 \cdot l^2 \quad (22)$$

The next stage of forecasting is to determine the baseline scenario for forecasting change indices: production level index (I_{LP}), labor productivity level index (I_{PL}), production efficiency index (I_{EP}), production cost index (I_{CP}) and market advantage level index (I_{MA}).

The final stage was the calculation of the basic predicted value of the integral index of the competitive position level based on formula 2. The calculation results are shown in table 13.

Table 13. Forecasted values of the index of the level of competitive position of an agricultural enterprise and the agricultural sector of Ukraine for 2020-2022.

Indicators		Years		
		2020	2021	2022
Index of change in the level of production	Agricultural enterprise	1,10	1,11	1,13
	Ukraine	1,41	1,43	1,44
Labor productivity change index	Agricultural enterprise	0,99	0,98	0,97
	Ukraine	1,43	1,47	1,51
Production efficiency change index	Agricultural enterprise	1,08	1,08	1,08
	Ukraine	4,50	4,91	5,34
index of change in production costs	Agricultural enterprise	0,42	0,32	0,22
	Ukraine	0,45	0,39	0,33
Market advantage change index	Agricultural enterprise	2,06	2,21	2,36
	Ukraine	2,27	2,42	2,57
Integral index of the level of competitive position	Agricultural enterprise	**1,00**	**0,96**	**0,90**
	Ukraine	**1,56**	**1,58**	**1,58**

Source: calculated by the authors

The analysis of the data in Table 13 shows that according to the baseline forecast scenario, the level index of the competitive position of the economy decreases, while the industry average remains almost stable (with a small increase).

To assess the stability of the competitive position of the agricultural enterprise, we calculated the coefficient, which was defined as the ratio of the integrated index of the level of the competitive position of the enterprise to the corresponding indicator in Ukraine as a whole. The result is shown in Figure 3.

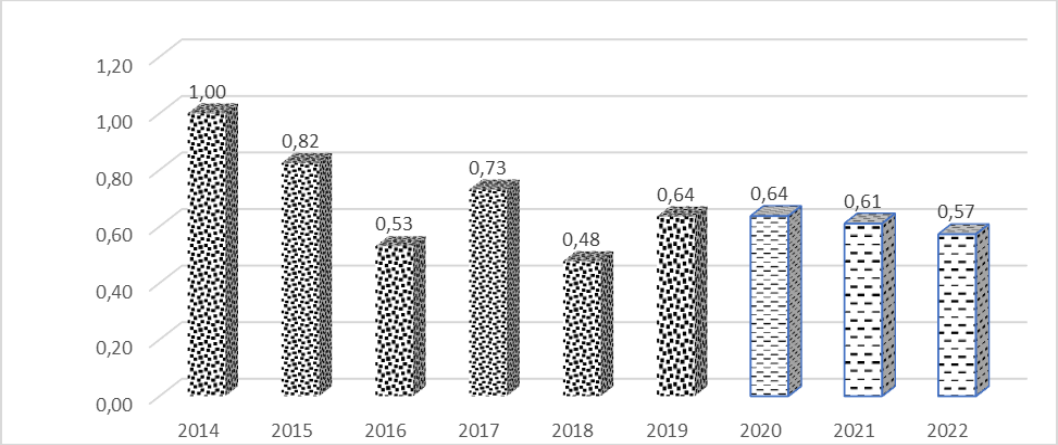


Fig. 3. Integral index of stability of the competitive position of an agricultural enterprise
Source: calculated by the authors

So, the forecast shows that while maintaining the existing trends, the stability of the competitive position of an agricultural enterprise in the future decreases.

The calculations performed correspond to the basic scenario of the development of events.

To calculate the pessimistic and optimistic variants of the development of events, it is proposed to correct (add or subtract) the standard deviation for the considered period of time:

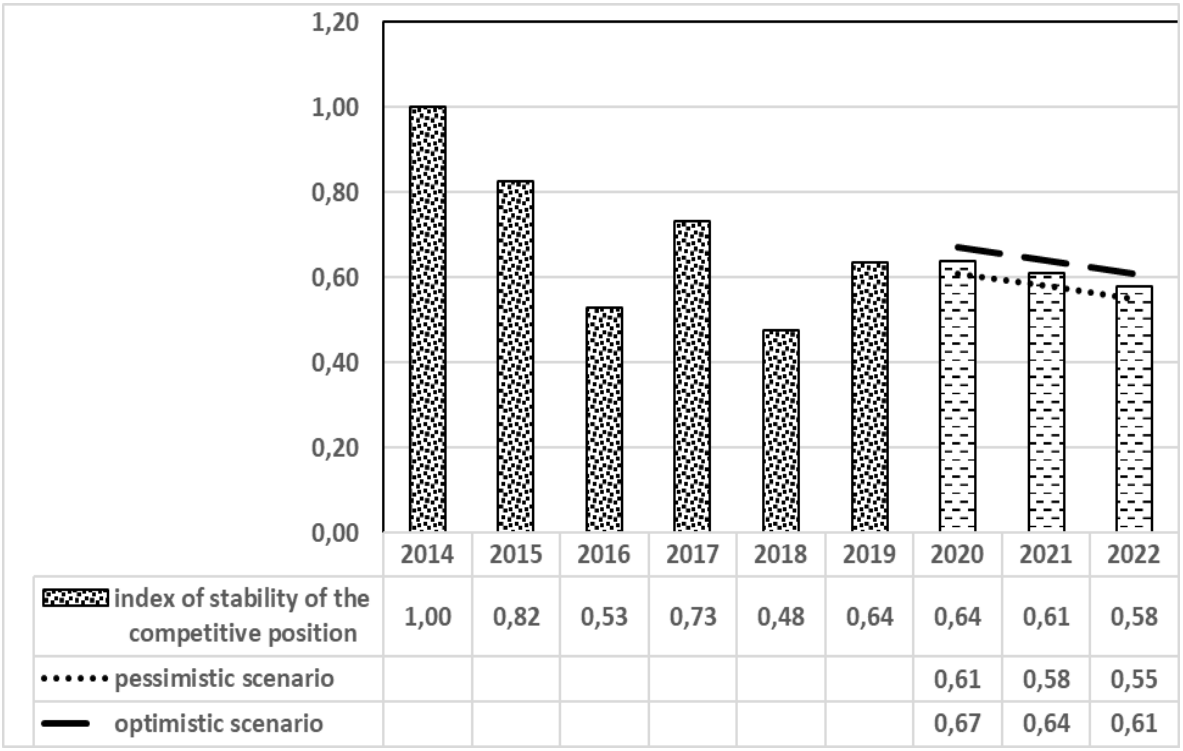
$$PI_{SCP} = I_{SCP} - STDEV(I_{SCP})$$
$$OI_{SCP} = I_{SCP} + STDEV(I_{SCP}) \quad (23)$$

PI_{SCP} – pessimistic assessment of changes in the integral index of stability of the competitive position of an agricultural enterprise for the t-th year;

OI_{SCP} – optimistic assessment of the change in the integrated index of stability of the competitive position of the agricultural enterprise for the t-th year;

$STDEV(I_{SCP})$ –root-mean-square deviation of changes in the integral index of stability of the competitive position of an agricultural enterprise for the considered period of time.

The calculation results are shown in Figure 4.



	2014	2015	2016	2017	2018	2019	2020	2021	2022
index of stability of the competitive position	1,00	0,82	0,53	0,73	0,48	0,64	0,64	0,61	0,58
pessimistic scenario							0,61	0,58	0,55
optimistic scenario							0,67	0,64	0,61

Fig. 4. Forecast of scenarios of sustainability of the competitive position of an agricultural enterprise for 2014-2022.
**Source: calculated by the authors*

Discussion. Thus, the stability of the competitive position is a category that is always on the scales, on the one hand - the company with its ability to use resources efficiently, the ability to respond quickly to change, and on the other - the same effective competitors who have their advantages (technologies, resources, etc.). Ensuring a sustainable competitive position is a complex process that requires constant monitoring and forecasting of possible development scenarios. A correctly chosen methodology for assessing the stability of the competitive position of an enterprise will determine how it will be able to strengthen its position in the market environment. When choosing a method, it is necessary to take a differentiated approach, analyze the industry-specific characteristics of the enterprise and take into account its uniqueness. In our opinion, the analysis of the competitive position should provide for an integral assessment using indices of changes in individual indicators in comparing the industry average values and the enterprise. When assessing the sustainability of a competitive position, we consider it necessary to take into account not so much the absolute values of certain indicators, or their comparison with competitors (industry-average), but the dynamic trends of changes in the corresponding indicators in comparison with each other. Forecasting is an important tool for taking into account future changes when making management decisions. We propose an approach to the formation of management decisions to increase the level of sustainability of the competitive position of an enterprise using scenario forecasting methods.

Conclusions. The proposed model of dynamic assessment and forecasting of the sustainability of a competitive position allows to model the position of an enterprise in the near future, provides the necessary information for making informed management decisions. So, we propose a model with which you can not only assess the level of competitive position of the enterprise, but also to determine the direction of their support as a whole and in terms of individual components, to develop a conceptual framework for radical change in production, the content of leading market positions, development and improvement of products, profitability and competitive potential of the enterprise. The implementation of the proposed measures will contribute to ensuring the long-term competitive development of an agricultural enterprise and, on this basis, the sustainable development of agriculture in Ukraine.

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STRATEGIC MANAGEMENT OF PROPERTIES

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ABSTRACT

This paper is dedicated to the study of strategic management techniques for improving the return on in-vestment of a real estate company with techniques of increasing the financial leverage and reduction of sys-temic risk and specific risk of this kinds of companies. Some strategies are proposed with different capital allocation hypothesis and related result are provided.

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1. **Introduction.** Real estate investment trust (REIT) are quoted companies that buy and rent out real estate for making a profit. They are like a real estate fund with the differences that the first is quoted and traded like a stock and is obliged to give to the shareholder more than 75% (depending on country) of the taxable income as a dividend, while the second usually gain value with capital appreciation. The high tax efficiency and the possibility of a high diversification with a high number of real estate grant the presence of those kinds of products in a lot of investor's portfolio, also because of the high divided, usually significative. (Alcock, J., Steiner, E., and Tan, K.J.K., 2014; Fisher, Jeffrey, and William Goetzmann, 2005) REITs are usually used by investors who haven't the will, the time, the skills to get one or more investment properties, but want to maintain a position in this field. Buying an investment property has a lot of hidden risks and often investors prefer to pay a group expert with a management fee in the face of doing on their own. Nowadays, there are three types of REITs: those who buy properties, those who buy mortgages and gain from the interest rate and those who are a mix of the first and the second. A lot of REITs for reducing specific risk have some different policies: some buy only a single kind of building, for example industrial buildings, in different places to diversify and to protect their capital from a fast depreciation that could happen. Others buy luxury buildings or hotels, or houses in high density places… Those kinds of actions lead to the creation of numerous REITs, each specialized in a different field with experts groups that asses specifically every opportunity before entering the market. (Bers, M., and T. M. Springer. 1997) Others kind of REITs to maximize diversification buy every kind of buildings. (Allen, M.T., J. Madura and T.M. Springer, 2000) Market nowadays let the investor, even the smallest one, have the possibility of being exposed to such a sector, enjoying the benefits and the drawbacks. (Ang, A., J. Chen, and Y. Xing 2006) Another important element to keep in mind is the kind of renting contract that the REIT makes to the tenant, sometimes it hasn't a fixed price, but it could fluctuate, for example in the case of changing interest rate, or in the case of a commercial building could be provided a fixed part and a percentage on the revenue of the tenant.

The biggest problem related to REITs is that they are somehow correlated with SP500 (beta 0.8 in 5 years) so they aren't effective in diversifying the portfolio of an investor because if the SP500 goes down so the REITs. (John B. Corgel, Chris Djoganopoulos 2019; Case, B., Y. Yang, and

Y. Yildirim, 2012) Properties don't keep the same value forever, but their value will go up (down) according to the place's economy. Leveraged REITs often use derivatives to grow the leverage and if the economy keeps growing, in some cases, they could be a better opportunity that an unleveraged REIT. Leveraged REITs are usually more costly than unleveraged, making them attractive only for special kinds of investors. (Giacomini, E., D. C. Ling, and A. Naranjo, 2015) For the author now is the time to implement new strategies in the management of buildings in companies maximizing the return on investment and managing systemic risks with options. Those kinds of derivates have been demonstrated to be useful in trading (Carlier 2021, Doran, James and Fodor, Andy 2006). Risk shouldn't be seen as a harm for the investor, but as an opportunity that could lead to big gains. (David C. Ling, Andy Naranjo, Benjamin Scheick, 2018) More risk is equal to more gains.

2. **The strategy.** The strategy proposed is well suited in a European environment and need leverage to be done correctly and need a group of expert in the field able to evaluate correctly the buildings: the example now explained is proposed with only one building, but in a real world scenario a big diversification should be applied to remove the specific risk of this kind of investments.

Suppose an investor would like to buy a building with a 5:1 leverage and with a starting capital of 20,000 euros could buy a 100,000 euros building. Let say that the mortgage has an 1% interest rate (April 2021) and a net profitability (rent) of 6%. We will have the following possibilities:

-10 years mortgage, 700 euros per month, calculated with the constant rate method, with a 634 starting capital and 66 starting debt, the rent give us a 500 euro so with this possibility we have a negative result

- 15 years mortgage, 478 euros per month, 412 starting capital and 66 starting debt, the rent give us a 500 euro so with this method we can have a positive cash flow of 264 euros in one year.

- 20 years mortgage, 367 euros per month, 301 starting capital and 66 starting debt, the rent give us a 500 euro so with this method we can have a positive cash flow of 1596 euros in one year.

Calculating the annual yield we can see that in short time it dramatically drops ending at the end of the mortgage to a 6%. Let continue the example: after the first year of activity we will have taken 6000 from the rent, 720 c.a. of expenses for interest rate, 4944 capital gain for a net profit of 26% calculated on the 15 years mortgage example and with a starting capital of 20,000. At the end of the second year the yield pass from a 26% to a 20.8%, in the third year 17.3%, fourth 14.8% fifth 13% so an investor can see his yield dramatically going down, his capital will grow, if the building doesn't lose value, but in 5 years we have cut half the yield from 26% to 13%. The answer to this lose of yield is to renegotiate the mortgage after 5 years to get a big liquidity buying a new building at 20,000 so doubling the investment, obtaining more leverage and risks and gains. The biggest problem with this kind of activity could be the over exposition to the systemic risk of the market and the risk is that with a liquidity crisis or a market risk in which buildings value go down, if the rent goes down the company will suffer extremely high loses. To reduce this kind of risk we can use derivatives to hedge against systemic risks, swaps, futures, options could help the investor. (Gyourko, J., and E. Nelling. 1996) Suppose an investor would like to sell a call after 5 years and buying a put, building a collar to the investment already done. An investor can sell options, futures or swaps on total return real estate indexes. They could even enhance yield. Real estate investments are beta correlated with SP500 and if it isn't possible to sell futures on real estate indexes an investor can sell a correct quantity of futures on SP500 hedging the systemic risks. An investor could do a strategy that use 50% of his capital on a simple buy and hold, and the other 50% using a renegotiation strategy. In the next paragraph I will explain different scenarios with all the different gains and lost for every capital allocation strategy.

3. **Methods.** The starting capital for the examples is 20,000 euros. The monthly payment of the mortgage has been calculated with the constant rate method and with a 1% interest rate, (April 2021). Acquisition fees have been calculated as 8% and the net annual yield of the renting is 6%. The results are calculated with a mortgage of 25 years at fixed interest rate. Three methods of capital allocation are illustrated:

- no leverage capital, consist of buy a building and simply rent without mortgage

- 5:1 leverage, consist in buying a building, renting and doing a mortgage giving to the seller 20% of the value of the building and 80% as a mortgage

- 5:1 leverage with renegotiation, same as before, but with a renegotiation after 5 years.

Methods are calculated supposing the price of the building remain the same during the years. Discussion follows the result of the example.

4. **Results**

Zero leveraged:

Starting capital: 20,000

Property bought valued = 18,400
Buying expenses: 1,600
Yield annual: 6% =1,104
Capital after 10 years = 29,440
Time for 100%= 18,11 years
25 years = 46,000

Zero leveraged is the test example that shows a capital grow linearly and could be, in the case of an investor completely adverse to risk, a good choice. This method net in ten years 47.2% (29,440 euros after ten years) and in 18,11 years investor will have 100%. In 25 years c.a 130% (Table 1).

5:1 leveraged

Starting capital: 20,000
Property bought valued= 92,000
Buying expenses= 8,000
Annual yield 6%
Mortgage payment= 368 Interest rate expenses= 66 (starting rate)
Monthly yield= 460

Capital after 10 years= 38,002 (paid mortgage)+ 92,000(property bought valued) +11,040 (Monthly yield- mortgage payment *120)=141,042 -mortgage to be paid(41.664)= 99,378

25 years = 80,000 (mortgage paid)+ 92,000+ 27,600= 199,600

5:1 leveraged is the most common example for an investor who buy a building with a mortgage, the yield is higher than the previous example because of the bigger value of the building acquired. This kind of method keep a good high yield in the early years but after a while yield decrease granting an excellent 396.9% after ten years and a 898% in 25 years. (Table 1)

Mortgage renegotiation

Starting capital 20,000
Property bought valued= 92,000
Buying expenses= 8,000
Annual yield 6%
Mortgage payment= 368 interest rate expenses 66(starting rate)
Monthly yield= 460
After 5 years renegotiation
Capital= 18,526 (mortgage paid) + 5,520 (cashflow monthly yield)= 24,046 (92,000 building bought)
Second property bought = 92,000
Buying expenses =8,000
Cash remained after expenses= 4,046
Mortgage to be paid =160,000
Mortgage payment = 368*2 Interest rate expenses 66(starting rate)*2
Monthly yield= 460*2
After 10 years = 236,139-mortage to be paid (122,313) = 113,826
capital = (92.000*2) + 4,046 (cash remained) + 11,040 (cashflow monthly yield *2)+mortgage paid 37,053= 52,139
Cash after buying 3 and 4 building = 52,139-40,000= 12,139
Buying expenses 16,000
Total properties valued =92,000*4
Total mortgage= 320,000
Mortgage payment = 368*4 interest rate expenses 66(starting rate)*4
Monthly yield= 460*4
After 15 years= mortgage paid 74,106+cash remained 12,139+(cashflow monthly yield*4) 22,080 = 108,325 +92,000*4 – 244,627 mortgage to be paid= 231.698
Cash = 108,325
Cash after buying 5 new buildings= 8,325
Total properties valued=92,000*9

Total mortgage= 720,000
Mortgage payment = 368*9 interest rate expenses 66(starting rate)*9
Monthly yield= 460*9
After 20 years = 224,743 +92,000*9- mortgage to be paid 550,411=502,332
capital= 166,738 mortgage paid + cash remained 8,325 +(cashflow monthly yield *9) 49,680= 224,743
Cash after buying 11 new buildings=4,743
Total properties valued =92,000*20
Total mortgage= 1,600,000
Mortgage payment = 368*20 interest rate expenses 66(starting rate)*20
Monthly yield = 460*20
After 25 years = 4,743 cash remained + 370,530 mortgage paid+ (cashflow monthly yield *20)110,400 = 485,673+1,840,000-1,229,469 = 1,096,204

The last strategy is the best from the yield point of view, but is either the riskiest one. Calculating LTV (loan to value) it can be seen that after five years it comes back to its initial value. In the case of a big drawdown in the economy of the buildings and in the case of a reduction of the rents, or either in a situation where a lot of tenants are in bankrupt, the investor could be in real trouble because he couldn't be in the possibility of lowering mortgages payments that could lead to bankrupt of the investor. In some cases, the bank could even ask more money to the investor if the LTV grow after an established value to hedge against an investor bankrupt. In some negative cases the investor could be forced to sell the asset (like a common margin call). In this kind of strategy is really important risk management and the use of derivatives to protect capital and hedging and reducing risks. In the specific case selling call, on a 5 years timeframe, creating a synthetic short put, could help to reduce the losses if the market goes strongly against the investor. Other strategies as highlighted before could be creating a collar, or selling futures or swaps. The yield of this strategy confirm starting hypothesis having a high yield in ten years 469.1 % and an astonishing 5,381% in twenty-five. (Table 1)

Table 1. Statistics for strategies

	10 Years	**%**	**25 years**	**%**
Zero leverage	29.440	47,2	46.000	130
5:1	99.378	396,9	199.600	898
Mortage reallocation	113.826	469,1	1.096.204	5381

In the strategies explained the building value over the time was considered equal in years, but it isn't what happens in the real world where the price follows the economy of the place. The Mortgage reallocation strategy need to be adapted in some way, for example if properties lose or gain value leverage shouldn't be over 5:1.

5. Conclusions.

Three different way to allocate capital were developed in the real estate market with three different risk profiles that space from a totally risk-adverse investor to a risk-taker one. The optimal strategy for the author is to use the techniques already explained in a global portfolio vision, without owning too many assets Beta correlated to reduce systemic risks, that could give the investor a dramatic lost in case of a black swan event.

For the management of the properties it could be used a strategy that use 50% of the capital in the first or in the second strategy (depending on the risk tolerance of the investor), and another 50% in the mortgage renegotiation strategy to optimize yield over time with the renegotiation strategy without having a huge leverage to manage and the hedging against adverse events. Another way to manage money could be using a longer time in mortgages letting the investor accumulate less money in the mortgage thus keeping the yield high for a longer time. This strategy will lead to a bigger cash flow in the investor bank giving him the opportunity to further diversify his portfolio.

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UNDERSTANDING CUSTOMER ACCEPTANCE TO FINANCIAL TECHNOLOGY; STUDY IN INDONESIA

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Financial Technology; Consumer Behaviour; UTAUT2; Technology Acceptance; Behavioral Intention.

ABSTRACT

In the Era of Digital 4.0, technology is of undeniable importance to any industry, including banking and finance. The disruption of technology and economic crisis has brought us the innovation of financial technology which is now mushrooming throughout the world. Financial Technology is an instrumental tool for financial inclusion thus has a big potential value in countries such as Indonesia. However, the acceptance of this new way of financial alternative still leaves a huge area for investigation. Especially in the acceptance of this technology as an alternative to conventional way of doing financial investment. The article is trying to investigate the acceptance of the financial technology sector to customers and the intention to use it in the future. The research found that the minimal effort and the availability of resources that facilitate contribute greatly to the acceptance of financial technology to the users. Furthermore, the result implies that social factors, hedonic motivation and habits have no significant effect on the intention of adapting this new way of doing financial activities.

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1. Introduction. In the Era or Digital 4.0 technology, the old industrial business is changing form into a new business form that is faster, more flexible and more efficient in operations in various industrial fields including in the area of banking and finance. Technological disruption and economic crisis have led us to financial technology innovations that are now mushrooming around the world. Financial technology is one of the innovations for financial inclusion which has great potential value for countries around the world (Rosa Righi et al., 2020). Fintech is an alternative financial system that provides technology-based solutions that change the way you pay, transfer money, borrow or provide loans, and invest electronically. This sector can compete with conventional banks, especially in payments, money transfers, mobile payments and peer to peer lending (loans) (Chishti & Barberis, 2016). According to other experts, defining FinTech as a global phenomenon that was born between financial companies and technology providers by utilizing digital technology and sophisticated analytical systems to provide financial services to benefit the economy for consumers in the long term (Sironi, 2016). (Chris Skinner, 2016) said that Fintech is a new digital financial market that appears over time to replace traditional financial markets that combine traditional financial processes such as working capital, supply chains, payment processes, deposit accounts, life insurance based on technological processes. new.It can be concluded that fintech is a new innovation in alternative financial services such as payments, money transfers, borrowing, storage, deposits and other services in new ways that can provide efficiency, security, reliability, flexibility, resulting in new financial markets and threats. in the traditional financial system by utilizing a technology base.

The acceptance of these new financial alternatives still leaves a very large area for investigation. The emergence of this fintech service technology is experiencing acceptance and

rejection in this sector among existing millennial customers. In the case of Indonesia, the newly introduced fintech services have also prompted the emergence of many illegal fintech services. This illegal fintech takes advantage of people's ignorance in running its business operations to reap huge profits. The ease of requirements for making loans on this fintech service has caused many people or customers to become entangled with online loan debt with high interest, so that many customers have problems in paying off their debts. This raises the potential for resistance from the adaptation of this new technology to a group that is actually very potential, the millennial generation.

According to (Howe & Strauss, 2000) the millennial generation is a generation born between 1980 and 2000, with 24 million of Indonesia's 255 million fintech service users who are still low. According to the FSA, this generation covers 70% of borrowers and 69.71% of lenders in the fintech industry (19 - 34 years). It can be seen that even though this generation has high proportion, the immature industry category still leaves potential for resistance, especially with the emergence of illegal fintech. Data on fintech companies released by the Financial Services Authority (FSA) of Indonesia, in March 2020 there are 161 company participants that were officially registered with the Financial Services Authority. The large number of illegal fintechs has prompted the Financial Services Authority (FSA) to close the illegal fintechs until mid-March 2020, totaling 508 fintechs.

Thus, this current study attempts to investigate the acceptance of the financial technology sector to customers and the intention to use it in the future, especially the millennials generation. Past research conducted by (Ramos & Martinez, 2016) with the object of millennial generation respondents, the results of their research show that the variable Performance expectancy affects the Behavior intention variable, the Effort Expectancy variable affects the Behavior intention variable, the Financial Literacy variable affects the influences variable Effort Expectancy, and the financial literacy variable has an effect on the behavioral intention variable. Other research that has been conducted by (Chopdar et al., 2018) on mobile shopping customers has concluded that the results are Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Hedonic Motivation, Price Value which has a significant influence on behavioral intention to use mobile shopping applications. Then the variables Facilitating Conditions, Habit, and behavioral intention have a significant influence on the use behavior variable in the use of mobile shopping applications. With all the previous studies as reference, the paper tried to focus on the acceptance of financial technology in the segment of millennial. The underlying theory applied for this study is Unified Theory of Acceptance and Use of Technology by Venkatesh et al (2003).

Unified Theory of Acceptance and Use of Technology (UTAUT)

Venkatesh and his friends developed and formulated a technology acceptance model in 2003 with the name Unified Theory of Acceptance and Use of Technology (UTAUT). The development of the UTAUT model by Venkatesh is through a review and review of the incorporation of eight previous research models that have been used to explain the behavior of Information Technology users, namely (Theory of Reasoned Action, Technology Acceptance model, Motivational Model, Theory of Planned Behavior, A Combined Theory of Planned Behavior. / Technology Acceptance Model, and Social Cognitive Theory).

The UTAUT model aims to explain user intent in using Information Technology and describe subsequent user behavior. The UTAUT model has been shown to explain up to 70% of the variance in user acceptance (Venkatesh et. Al., 2003). The UTAUT model is basically a further development of the TAM model which consists of two main components, namely Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) which have a direct influence on Intention to Use (BI) and Usage Behavior (B) at a later stage. The UTAUT model is basically the same as the TAM model by adding two components, namely social influence and facilitating conditions (Venkatesh et. Al., 2003).

The UTAUT model shows the factors that influence the acceptance of a technology in a community. The external factors affecting the acceptance of a technology are clearer because they are more specific. According to Venkatesh (2003), behavioral intention variables will be influenced by the variable performance expectancy, effort expectancy, and social influence. The relationship between the variable performance expectancy, effort expectancy, and social influence with behavioral intention will be influenced by the moderator variables gender and age. So it means that the variable performance expectations (performance expectancy) affects the desirability of the habit of using technology (Behavioral intention) and this factor is influenced by controlling factors, namely gender (gender) and age (age).

This also applies to other external factors such as effort expectancy, social influence, and facilitating conditions, namely the relationship between effort expectancy and social influence with

behavioral intention will be influenced by experience, and voluntariness of use also affects the relationship between social influences. with behavioral intention. Then the use behavior variable will be influenced by behavioral intention and facilitating conditions, with the moderate variable age and experience affecting the relationship between use behavior and facilitating conditions.

In 2012, Venkatesh and colleagues conducted another study with the same model but provided additional variables to improve the UTAUT model that had been carried out previously. The refinement of this model is called UTAUT2 by adding Hedonic Motivation, Price Value, and Habit variables with the moderation being Age, Gender, and Experience (Venkatesh et al., 2012).

Hypothesis Development

Performance Expectancy in communication technology illustrates that users consider mobile applications to be useful because it allows them to complete goal-oriented tasks (Venkatesh et al., 2012). Performance Expectancy has a strong influence on Behavioral Intention to use m-shopping applications in India (Chopdar et al., 2018).

H1 = Performance Expectancy affects Behavioral Intention

Effort expectancy (EE) can be described as the level of convenience associated with the use of technology by consumers. There are previous researchers who confirm the results of their research that Effort expectancy has a significant effect on Behavioral Intention in mobile shopping applications (Chopdar et al., 2018).

H2 = Effort Expectancy affects Behavioral Intention

Social influence is the extent to which consumers think that the use of technology is very important to other people such as family or friends and believe that they must use certain technologies (Venkatesh et al., 2012). The results of the study state that social influence affects Behavioral Intention on mobile payments in restaurants by studying three generations of groups (Shatskikh, 2013).

H3 = Social influence influences Behavioral Intention

Facilitating Condition refers to consumers' perceptions of the resources and support available in carrying out a behavior (Venkatesh et al., 2012). The results of research conducted by (Chopdar et al., 2018) state that Facilitating Condition has a significant effect on Behavioral Intention in mobile shopping applications.

H4 = Facilitating Condition affects Behavioral Intention

Hedonic Motivation is defined as a pleasure obtained from using a technology and has been shown to have an important role in determining the acceptance of technology use (Brown & Venkatesh, 2005). The results of research conducted by (Chopdar et al., 2018) state that Hedonic Motivation has a significant effect on Behavioral Intention in mobile shopping applications.

H5 = Hedonic Motivation affects Behavioral Intention

The definition of Price Value is the exchange value that consumers think of between the perceived benefits of the application compared to the costs incurred in using the application. The results of the researchers (Chopdar et al., 2018) state that Price Value has a significant effect on Behavioral Intention on mobile payments in restaurants with a study of three generations of groups. So from the above explanation it can be concluded that the hypothesis is as follows:

H6 = Price Value affects Behavioral Intention

Habit is defined by the extent to which people tend to behave automatically due to learning (Limayem et al., 2007). Within a certain period of time a different individual can form different levels of habits depending on the use of technology as their target (Venkatesh et al., 2012). The results of the study state that Habit influences Behavioral Intention on mobile payments in restaurants with a study of three generation groups (Shatskikh, 2013).

H7 = Habit has a direct effect on Behavioral Intention

The results of the researchers (Chopdar et al., 2018) state that Behavioral Intention has a significant effect on Use Behavior in mobile payments in restaurants with a study of three generations of groups.

H8 = Behavioral Intention affects Use Behavior

The results of the study (Shatskikh, 2013) state that Facilitating Conditions affect the Use Behavior of mobile payments in restaurants by studying three generations of groups.

H9 = Facilitating Condition affects Use Behavior

The results of research conducted by (Venkatesh et al., 2012) state that Habit has a direct effect on Use Behavior in mobile applications.

H10 = Habit has a direct effect on Use Behavior

2. Methodology. The authors conducted a quantitative method with a survey questionnaire to conduct the research. Unit of analysis is the bank customers in the active working age of 25 to 55, assuming that they have acquired financial independence and are able to invest their earnings. Cities in Java Island are selected for this research including Jakarta and satellite cities (Jabodetabek), Bandung, Semarang and Surabaya. Questionnaire was conducted online. The questionnaire was created based on the variable instruments in the initial research model that was built. Each factor is translated into several questions that will be answered by the respondents. Respondents will be asked to answer questions based on a Likert scale of 1 - 5 with the lowest value on the Likert scale being "strongly agree" and the highest "strongly disagree".

Data Process and Analysis

In this study, the analytical method or tool used is SEM and path analysis using the AMOS program. Through SEM, the indicators that make up each variable will be tested, and then the linkage or relationship between the variables will be analyzed using path analysis.

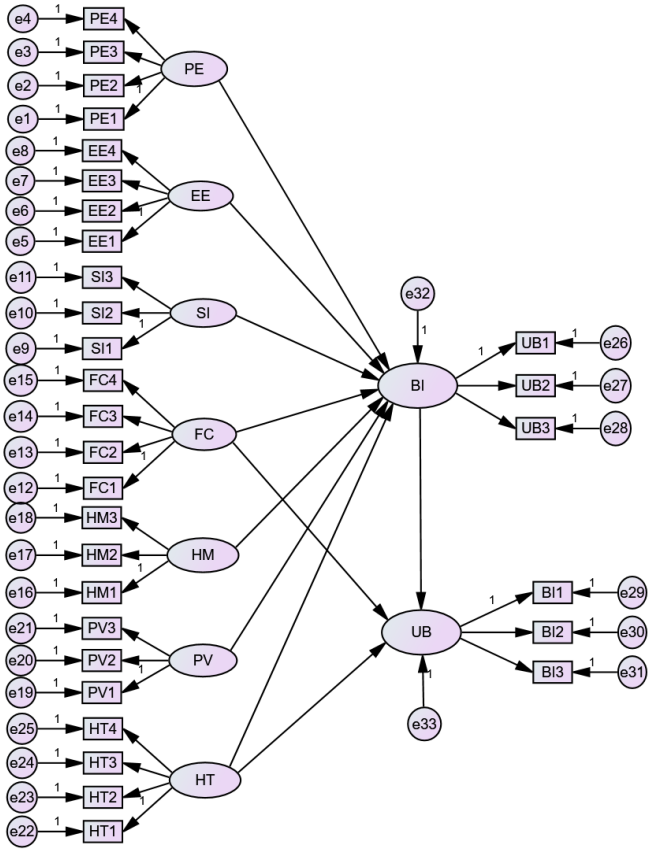

Diagram 1. Model

The data that has been collected is the result of distributing questionnaires to 107 respondents. The profile of respondents shows that the number of men is more than 77 people or 71.96%, so it can be said that the perception formed in this study is represented by male respondents and the rest is represented by female respondents as many as 30 people or 28.04% . The profile of respondents based on the age group between 30 - 35 years is 30.84%, followed by the 26-29 years old at 24.30% and 20-25 years at 21.50%. The results of the respondents' profit based on monthly expenses were dominated by respondents whose expenses were below 100 dollars with a total of 43 people or 40.19%. Respondents' profit based on socioeconomic status is dominated by respondents who are in the middle economy 1 with 32 respondents or 28.91%.

3. Result and Analysis.

The analysis starts with the validity and reliability test of the model, followed by a goodness fit test and the result of a hypothesis test.

The validity test was carried out on 31 items of question instruments that were asked in the questionnaire to 107 respondents. This is done to determine the validity of the questionnaire made and

given to respondents to be filled in and returned. The results of the calculation of Confirmatory Factor Analysis to test the validity of the variables in the model, namely the Performance Expectancy variable, the Effort Expectancy variable, the Social Influence variable, the Facilitating Conditions variable, the Hedonic Motivation variable, the Price Value variable and the Habit variable against the Behavioral Intention variable and the Use Behavior variable. seen in Figure 4.1 as follows:

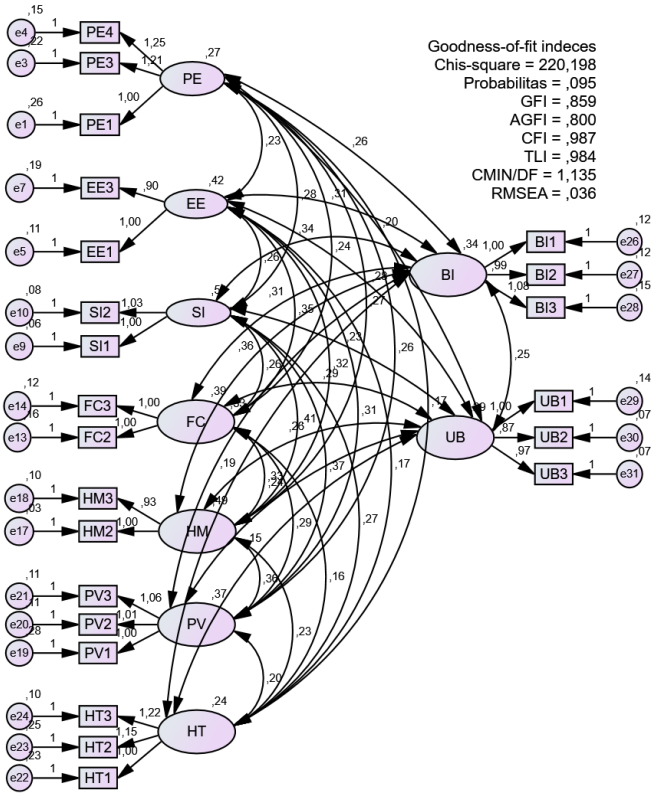

Diagram 2. Confirmatory Factor Analysis Result

To be able to find out whether the modified model that is built statistically can be supported and is in accordance with the fit model (goodness of fit index) which is a requirement in the assessment of the specified structural equation modeling (SEM) model, a comparison of the values of the model built with the specified requirements is shown. The following is a summary of the comparison of the models built with the specified requirements, as shown in Table 4.1 below:

Table 1. Goodness-of Fit Indices

Goodness of fit index	Cutoff value	Hasil Model	Keterangan
Chi-square	small is preferred	220,198	*Fit*
Probability	≥ 0,05	0,095	*Fit*
GFI	≥ 0,90	0,859	*Marginal*
AGFI	≥ 0,90	0,800	*Marginal*
CFI	≥ 0,90	0,987	*Fit*
TLI	≥ 0,90	0,984	*Fit*
CMIN/DF	≤ 3,00	1,135	*Fit*
RMSEA	≤ 0,08	0,036	*Fit*

Based on Table 1 above, all goodness of fit index studies have met the majority of fit, this shows that the overall model is accepTable, in other words there is a fit between the models built with the requirements of the fit model. The convergent validity value of each construct statement item is shown in Table 2. Based on Table 4.2 above, it shows that after being modified all the model construct statement items already have a convergent validity value above 0.5, it means that this statement item is able to define a model construct that meets the convergent validity.

Table 2. Standardized Regression Weights

			Estimate
PE1	<---	PE	,710
PE3	<---	PE	,800
PE4	<---	PE	,855
EE1	<---	EE	,886
EE3	<---	EE	,799
SI1	<---	SI	,950
SI2	<---	SI	,934
FC2	<---	FC	,843
FC3	<---	FC	,873
HM2	<---	HM	,971
HM3	<---	HM	,902
PV1	<---	PV	,755
PV2	<---	PV	,875
PV3	<---	PV	,887
HT1	<---	HT	,718
HT2	<---	HT	,750
HT3	<---	HT	,886
BI1	<---	BI	,860
BI2	<---	BI	,860
BI3	<---	BI	,850
UB1	<---	UB	,820
UB2	<---	UB	,879
UB3	<---	UB	,892

Reliability is a measure of the internal consistency of an indicator or statement item of a formed variable which shows the degree to which each indicator or statement item indicates a commonly formed variable (Ghozali, 2008). There are two ways that can be used, namely: Composite (Construct) Reliability and Variance Extracted, the cut of value of the Composite (Construct) reliability is at least 0.7 and the cut of value of the variance extracted is a minimum of 0.5.

From the calculation results, the composite (construct) reliability value for each construct is as follows:

Table 3. *Composite Reliability*

No	Variabel	Nilai *Cut-Of*	*Composite Reliability*	Keterangan
1	Performance Expectancy	≥ 0,70	0,833	Reliabel
2	Effort Expectancy	≥ 0,70	0,831	Reliabel
3	Social Influence	≥ 0,70	0,940	Reliabel
4	Facilitating Conditions	≥ 0,70	0,848	Reliabel
5	Hedonic Motivation	≥ 0,70	0,935	Reliabel
6	Price Value	≥ 0,70	0,878	Reliabel
7	Habit	≥ 0,70	0,830	Reliabel
8	Behavioral Intention	≥ 0,70	0,892	Reliabel
9	Use Behavior	≥ 0,70	0,898	Reliabel

From Table 3 above, it can be seen that the reliability of all research constructs with Composite Construct Reliability with the Cr value of each of the Performance Expectancy variables is 0.833, the Effort Expectancy variable is 0.831, the Social Influence variable is 0.940, the Facilitating Conditions variable is 0.848, the Hedonic Motivation variable of 0.935, the variable Price Value is 0.878, the Habit variable is 0.830, the Behavioral Intention variable is 0.892 and the Use Behavior variable is 0.898, which has a cut-of value of ≥ 0.70. Seeing the Cr results, all the constructs that exist in all statement items are reliable.

From the calculation results, the VE (extracted variable) value for each construct is as follows:

Table 5. *Variance Extracted*

No	Variabel	Nilai *Cut-Of*	*Variance Extracted*	Keterangan
1	Performance Expectancy	≥ 0,50	0,63	Reliabel
2	Effort Expectancy	≥ 0,50	0,7	Reliabel
3	Social Influence	≥ 0,50	0,9	Reliabel
4	Facilitating Conditions	≥ 0,50	0,74	Reliabel
5	Hedonic Motivation	≥ 0,50	0,88	Reliabel
6	Price Value	≥ 0,50	0,71	Reliabel
7	Habit	≥ 0,50	0,62	Reliabel
8	Behavioral Intention	≥ 0,50	0,73	Reliabel
9	Use Behavior	≥ 0,50	0,75	Reliabel

Based on Table 5 above, it shows that the value of the variance extracted for each construct is above the cut-off value, namely ≥ 0.5 with the value of each Performance Expectancy variable of 0.63, the Effort Expectancy variable of 0.7, the Social Influence variable. 0.9, the Facilitating Conditions variable is 0.74, the Hedonic Motivation variable is 0.88, the Price Value variable is 0.71, the Habit variable is 0.62, the Behavioral Intention variable is 0.73 and the Use Behavior variable is 0, 75, has a cut-of value of ≥ 0.50. Thus all constructs that exist in all statement items are reliable.

Variable Testing and Hypothesis Analysis

Testing the relationship between the dependent and independent variables is carried out using the help of the Amos 22 program to analyze the path so that it can be seen the magnitude of the influence between the variables contained in the research model.

The initial test is the relationship between the Performance Expectancy variable, the Effort Expectancy variable, the Social Influence variable, the Facilitating Conditions variable, the Hedonic Motivation variable, the Price Value variable and the Habit variable on the Behavioral Intention variable then testing the effect of the Facilitating Conditions variable, the Habit variable and the Behavioral Intention variable on the variable. Use Behavior. The results of testing the path analysis fit model using the help of the Amos 22 program can be seen in Diagram 3 below

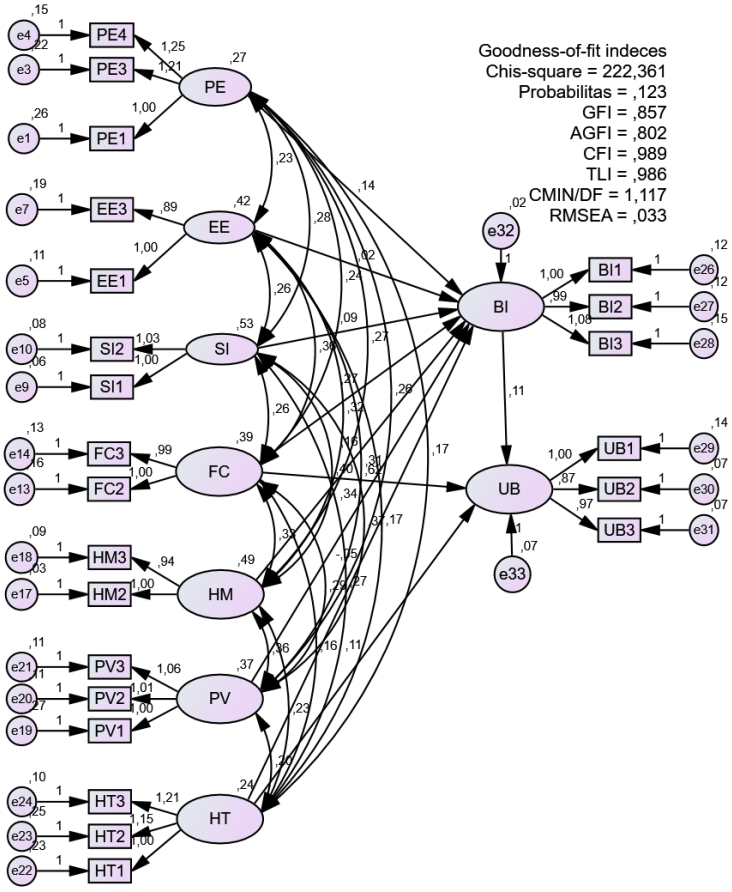

Diagram 3. Model Full SEM

From Diagram 3 above, it can be seen that the full model modification results through the correlation approach between the errors of each Performance Expectancy variable, the Effort Expectancy variable, the Social Influence variable, the Facilitating Conditions variable, the Hedonic Motivation variable, the Price Value variable and the Habit variable against the Behavioral variable. Intention then tests the effect of the Facilitating Conditions variable, the Habit variable and the Behavioral Intention variable on the Use Behavior variable. as shown in Figure 4.2 above, which in the end can improve the research model by fulfilling the fit SEM criteria, as presented in Table 4.6 below.

Table 6 Evaluasi Kriteria *Goodness of fit Index*

Goodness of fit index	Cutt of value	Hasil Model	Keterangan
Chi-square	Diharapkan kecil	202,361	Fit
Probability	≥ 0,05	0,123	Fit
GFI	≥ 0,90	0,857	Marginal
AGFI	≥ 0,90	0,802	Marginal
CFI	≥ 0,90	0,989	Fit
TLI	≥ 0,90	0,986	Fit
CMIN/DF	≤ 3,00	1,117	*Fit*
RMSEA	≤ 0,08	0,033	Fit

Based on Table 6 above, it can be seen that all assessments of goodness of fit indexes have been fulfilled as fit and marginal, marked by a Chi-square value of 202.361, still in the fit category because of the large sample size (107) with as many items (31 statements) so that the Chi-square value -square is large but under these conditions this value in giving meaning is still relatively small so that it is classified as fit category, Significant probability 0.123 is greater than 0.05, RMSEA 0.033 is less than 0.08, CFI 0.989 is greater than 0.90, AGFI 0.802 smaller than 0.90 but still quite fit, GFI 0.857 less than 0.90 is still categorized as fit, CMIN / DF 1.117 in the fit category and 0.986 TLI is greater than 0.90 then categorized as fit. The results of the evaluation show that the model built is correct to be able to confirm the relationship between the Performance Expectancy variable, the Effort Expectancy variable, the Social Influence variable, the Facilitating Conditions variable, the Hedonic Motivation variable, the Price Value variable, the Habit variable, the Behavioral Intention variable and the Use Behavior variable.

Thus it can be stated that this test yields good confirmation of the causal relationships between the variables that exist. The estimation results of testing the path analysis model can be seen in Table 7 below:

Table 7. Estimation Result Table

			Estimate	S.E.	C.R.	P
BI	←-	PE	,130	,063	2,060	,039
BI	←-	EE	,365	,063	5,830	***
BI	←-	SI	,037	,043	,860	,390
BI	←-	FC	,229	,065	3,547	***
BI	←-	HM	-,033	,048	-,690	,490
BI	←-	PV	,156	,058	2,695	,007
BI	←-	HT	,008	,065	,125	,900
UB	←-	BI	,491	,118	4,165	***
UB	←-	FC	,399	,080	4,976	***
UB	←-	HT	,273	,079	3,458	***

Table 7 above shows the results of testing on the construct model empirically found that the Performance Expectancy variable, the Effort Expectancy variable, the Facilitating Conditions variable, and the Price Value variable proved to have a significant positive effect on the Behavioral Intention variable, where the magnitude of the influence of Performance Expectancy is 0.130, Effort Expectancy of 0.365, Facilitating Conditions of 0.229 and a Price Value of 0.156 with a significance of Performance Expectancy of 0.039, Effort Expectancy of 0.000, Facilitating Conditions of 0.000 and Price Value of 0.007. Then for the Facilitating Conditions variable, the Habit variable, and the Behavioral Intention variable have a positive effect on Use Behavior, where the influence of the Facilitating Conditions variable is 0.399, the Habit variable is 0.273 and the Behavioral Intention variable is 0.491 with the significance of the Facilitating Conditions variable of 0.000, the Habit variable is equal to 0.000, and the Behavioral Intention variable is 0.000. While the Social Influence variable, the Hedonic Motivation

variable, and the Habit variable were proven to have no significant effect on the Behavioral Intention variable, where the influence of the Social Influence variable was 0.037, the Hedonic Motivation variable was -0.033, and the Habit variable was -0.008 with the significance of the Social variable. Influence is 0.390, Hedonic Motivation variable is 0.490, and Habit variable is 0.900.

Hypothesis testing aims to see whether the Performance Expectancy variable, the Effort Expectancy variable, the Social Influence variable, the Facilitating Conditions variable, the Hedonic Motivation variable, the Price Value variable, and the Habit variable affect the Behavioral Intention variable and whether the Facilitating Conditions variable, Habit variable, and Behavioral variable Intention affects Use Behavior. This hypothesis testing is done by looking at the Probaility (P) value of the Analysis of Structural Moment 22.0 (AMOS 22). Hypothesis testing in this study can be seen in Table 8 below:

Table 8. *Regression Weight* untuk Hipotesis

Hubungan variabel	Estimate	S.E.	C.R.	P	Keterangan
Performance Expectancy →Behavioral Intention	0,130	0,063	2,060	0,039	H_1 accepted
Effort Expectancy → Behavioral Intention	0,365	0,063	5,830	0,000	H_2 accepted
Social Influence → Behavioral Intention	0,037	0,043	0,860	0,390	H_3 not supported
Facilitating Conditions → Behavioral Intention	0,229	0,065	3,547	0,000	H_4 accepted
Hedonic Motivation → Behavioral Intention	-0,033	0,048	-0,690	0,490	H_5 not supported
Price Value → Behavioral Intention	0,156	0,058	2,695	0,007	H_6 accepted
Habit → Behavioral Intention	0,008	0,065	0,125	0,900	H_7 not supported
Behavioral Intention → Use Behavior	0,491	0,118	4,165	0,000	H_8 accepted
Facilitating Conditions, → Use Behavior	0,399	0,080	4,976	0,000	H_9 accepted
Habit → Use Behavior	0,273	0,079	3,458	0,000	H_{10} accepted

From Table 8 above empirically it is found that for testing the hypothesis of the variables Performance Expectancy, Effort Expectancy, Facilitating Conditions, and Price Value with the results of the hypothesis being accepted means that these variables are proven to positively affect Behavioral Intention with the coefficient estimate value of the Performance Expectancy variable of 0.130, the standard error (SE) is 0.063, the critical ratio (CR) is 2.060, the significant level p (probability) is 0.039. The coefficient value of the Effort Expectancy variable is 0.365, the standard error (SE) is 0.063, the critical ratio (CR) is 5.830, and a significant level of p (probability) is 0.000. The coefficient value of the Facilitating Conditions variable is 0.229, the standard error (SE) is 0.065, the critical ratio (CR) is 3.547, and the significant level of p (probability) is 0.000. The value of the estimate price value coefficient is 0.156, the standard error (SE) is 0.058, the critical ratio (CR) value is 0.058, and the significant level of probability is 0.007, because the p value (probability) is smaller than 0.05, or the critical ratio value is large. T at 5% alpha or 1.6594, then the hypothesis is accepted, meaning that Performance Expectancy, Effort Expectancy, Facilitating Conditions, and Price Value have an effect on Behavioral Intention. While the direction of the relationship between the four variables is positive, meaning that if the value of Performance Expectancy, Effort Expectancy, Facilitating Conditions, and Price Value has increased, this increase will also be followed by an increase in Behavioral Intention, on the contrary if Performance Expectancy, Effort Expectancy, Facilitating Conditions, and Price Value has decreased, so this decline will also be followed by a decrease in Behavioral Intention.

The study conducted further tests to see whether the Behavioral Intention, Facilitating Conditions, and Habit variables affect Use Behavior by looking at the estimated coefficient value of the Behavioral Intention variable of 0.491, standard error (SE) of 0.188, critical ratio (CR) value of 4.165, and a significant level of p (probability) 0.000. The estimated coefficient value of the Facilitating Conditions variable is 0.399, the standard error (SE) is 0.080, and the critical ratio (CR) value is 4.976, and a significant level of p (probability) is 0.000. The value of the estimation coefficient of the Habit variable is 0.273, the standard error (SE) is 0.079, the critical ratio (CR) value is 3.458, and a significant level of p (probability) is 0.000. Seeing the results of the data processing proves that the Behavioral Intention, Facilitating Conditions, and Habit variables have a significant positive effect on the Use Behavior variable. The direction of the relationship between these four variables is a positive slope, meaning that if the values of Behavioral Intention, Facilitating Conditions, and Habit have increased, this increase will also be followed by an

increase in Use Behavior, conversely if Behavioral Intention, Facilitating Conditions, and Habit have decreased then this decrease will also be followed by a decrease in Use Behavior. Meanwhile, there are 3 variables resulting from data processing that have no effect on Behavioral Intention, namely the Social Influence, Hedonic Motivation, and Habit variables which do not significantly influence the Behavioral Intention variable with the Social Influence variable significance of 0.390, the value of the Hedonic Motivation variable is 0.490 and the Habit variable is equal to 0.900, then all significance values are greater than 0.05 so that the hypothesis test results are rejected.

4. Conclusions. The results of this research show that the variables Performance Expectancy, Effort Expectancy, Facilitating Conditions, and Price Value have an influence on Behavioral Intention. Then for the Behavioral Intention, Facilitating Conditions and Habit variables have a direct influence on Use Behavior but the Social Influence, Hedonic Motivation, and Habit variables do not have a significant effect on Behavioral Intention.

From all variables tested, the study found that the minimal effort and the availability of resources that facilitate contribute greatly to the acceptance of financial technology to the users. Furthermore, the result implies that social factors, hedonic motivation and habits have no significant effect on the intention of adapting this new way of doing financial activities. Moreover, the Effort Expectancy variable has the greatest effect on the Behavioral Intention variable, while the Behavioral Intention variable is the dominant influence on Use Behavior. Thus the innovations are expected to be seamlessly integrated into a financial solution before it triggers the intention and use behavior.

Although efforts have been made for the study, it still has many shortcomings. The time in collecting data was very short, making it difficult to collect a large number of respondents. The number of respondents is still limited due to the limited number of respondents who have familiarity with the financial technology knowledge. Nevertheless, the study hopes to reach its goals to provide explanations on the potential adaptation of fintech in the future. For further research, other variables related to fintech can be added in order to better explain whether there is a relationship with the habit of using fintech services.

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JUSTIFICATION OF THE ESSENCE, FUNCTIONS AND PURPOSE OF GRAIN FUTURE EXCHANGE MARKET OF AGRICULTURAL PRODUCTS

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ABSTRACT

In the article analyzes the development of the domestic stock market.
It is substantiated that crop futures are a derivative financial instrument on the stock exchange, which provides for the obligation of its seller or buyer to periodically transfer sums of money to the opposite party depending on changes in the market price of grain, and (or) the obligation delivery of grain on time.
It is determined that only under the conditions of joint efforts on the part of the state, the exchange community, participants of the agrarian market that will allow bringing the exchange commodity market closer to civilized bases.

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Introduction. The first definitions of futures first appeared in foreign economic publications, as the history of modern futures (wholesale correspondence, non-cash) trading began in the Midwestern United States in the early 1800's.

A large number of works by both domestic and foreign scientists are devoted to the issue of the functionality and purpose of grain futures on the stock market of agricultural products.

Research purpose. In the article there is a study of the essence, main functions and problems of development of grain futures of the exchange market of agricultural products and coverage of possible prospects and its development.

Research materials and methods. The basis of the research is the following general scientific methods: monographic and dialectical − to collect, systematize and process information in order to conduct research on the functionality and purpose of grain futures in the stock market of agricultural products.

Results. In the scientific literature there are presented of values of the given term, which represent both its interpretation in the fallowness of the same interpretation (Fig. 1.).

On the thought of De Kovno Sh. and Takki K.: «a contract for the sale of crops or buy a single piece of goods for the agreed price for delivery on a special date». Such a rank is given to the transfer of crops, as the buyer and the seller are for sure one, but it does not represent the economic day-to-day business, which has its own price, as it is to be stored on the basis of the supply in order to drink and drink.

Krynychanskyi K.V. considers futures as a standard contract and document.

V.V. Twardowski denies all of the above definitions and believes that: «a futures is not a commodity, not a security, but an electronic record registered by a broker about the bidder's commitment to supply or arrive a certain amount of underlying asset on a certain date in the futures». This opinion is very relevant today, as securities have long ceased to be issued on paper and their purchase and sale takes place in seconds. At the same time, this definition emphasizes the peculiarities

of the registration of futures on the exchange and the obligations of the buyer and seller, but does not reflect the fixation of the price of the asset.

Among the authors are those who believe that futures are securities. However, in our opinion, the assignment of futures to securities is incorrect [2].

Interpretation	Definition
Agreement	A futures contract is an agreement for the future supply of an underlying asset that is entered into on an exchange.
	A futures contract is an agreement to buy or sell an asset at a specified time in the future at a specified price.
	Securities futures are an agreement (obligation), not a choice, as opposed to an option to buy and sell a standard quantity of a certain type of securities on a certain date in the future at a price set in advance at the time of the transaction.
	Futures — special forward futures contracts concluded on exchanges, purchase and sale agreements for goods, gold, currency, and securities at prices in force at the time of the agreement with the delivery of the purchased goods with its payment in the future.
Contract	A futures contract is a contract between two parties to exchange assets or services at a specified time in the future and at a price agreed by the parties at the time of the transaction.
	A futures contract is a standardized forward contract that can be revoked by either party by offsetting the futures contract.
	A futures contract is the same as a forward contract, with one exception. Under a forward contract, the buyer and seller determine the amount of their losses and rewards only on the settlement day, and under futures such settlements are made daily.
Obligation	A futures contract is an obligation to buy or sell a specified quantity of a commodity at an agreed price for delivery on a specified date.
	A futures contract (a contract for the sale of a commodity with its delivery in the future) is defined as «the assignment of a contractual obligation to buy or sell a fixed quantity and variety of a particular commodity on a specified date».
Resolution	A futures contract is a contract concluded at an exchange auction, provides for the obligation of each party to the contract to periodically make payments of money depending on changes in prices (prices) and / or values (values) of the underlying asset and / or the occurrence of circumstances, which are the underlying (underlying) asset.
	Futures or futures contract, is determined by the standard contract for the supply of goods in the future at a price determined by the parties at the conclusion of the contract
Document	A futures contract is a document that defines the rights and obligations of counterparties (buyers, sellers) to receive or transfer property (various assets - including goods, currency, securities) or information indicating the procedure for such receipt or transfer.
Electronic record	A futures is not a commodity, not a security, but an electronic record registered by a broker about the bidders' commitments to supply or receive a certain amount of the underlying asset on a certain date in the future.

Fig. 1. The essence of the concept of «futures».
Source: the author's own research

This definition of the term «futures contract» has a disadvantage, because it includes in addition to futures and options, so it does not fully disclose the economic nature of the financial instrument.

Obviously, most authors do not share the concepts of futures and futures contracts and recognize futures (futures contracts) as a contract that emphasizes the bilateral obligations that arise between its seller and buyer and its legal nature.

Generalizing all the above, we came to the conclusion that in the modern scientific literature and legislation there is no distinction between the terms «futures» and «futures agreement», many authors use them as synonyms, which complicates the development of this tool in our country.

In our opinion, futures have the following properties: belonging to financial exchange instruments, production, have increased risk, urgency, inevitability (binding) for the parties to the transaction. In particular [9]:

1. Belonging to financial instruments. We believe that crop futures should be classified as financial instruments for the following reasons:

First, there are financial relationships when using crop futures. Financial relations mean monetary relations that arise in the process of distribution and redistribution of the value of social product and part of national wealth in connection with the formation of economic entities and the state of monetary income and savings, the formation and use of special-purpose funds. In the process of using futures, funds are redistributed between agricultural producers, speculators and other market participants in futures crops through the exchange [10];

Second, the emergence of crop futures on the market leads to new financial flows in the form of (tax payments, obtaining credit resources and repayment of loans, cargo insurance on the road);

Third, with the introduction of futures for crops are developing various financial market institutions that affect the formation of not only production and marketing infrastructure (elevators, carriers and processors of grain), but also exchange infrastructure (banks, organizations that carry out commodity lending, insurance and leasing companies).

2. Belonging to exchange instruments. Futures are an exchange-traded instrument, their main difference from a forward.

3. Production. The market value of crop futures changes as the price of the underlying asset changes. The essence of production can be interpreted in a narrow sense (production − depending on the price of the underlying asset and other cost characteristics), and in a broad sense (production − depending on the effect). In our opinion, the interpretation of production in the narrow sense significantly limits the conditions of futures pricing. Since their exchange value depends on the effect of their use, benefits, and not only on the market price of the underlying asset (in our case, grain). For this reason, the final financial result of a deal with grain futures is not known in advance and depends on many factors, often unpredictable [10].

4. Increased risk. In our opinion, futures have an increased risk due to the fact that the initial investment in its purchase is much less than the value of the derivative itself. When purchasing futures, you need to pay a guarantee (deposit margin). Usually its value is from 2–15 % of the contract value. Thus, a change in the market value of futures by 1% can lead to a change in the investor's account by 6.7-50%. In addition, futures market participants face a unique uncertainty in their professional activities that cannot be calculated in advance based on available empirical material.

5. Urgency. The division of the futures and spot markets is based on the criterion of urgency, and is called «three working days». If the settlements under the agreement are made within three working days after its conclusion, this agreement refers to the spot market, if later − to the futures market.

Crop futures have the property of urgency due to their economic nature, according to which the two parties agree on the supply of the underlying asset (crops) after a certain period in the future. For example, the term of grain futures on the stock exchange is 12 months.

6. Inevitability (binding) for the parties to the agreement. Futures are mandatory for each participant (as opposed to an option) and take the form of delivery, exchange settlement and offset agreement. Inevitability for the parties to the agreement is explained by the settlement and payment consequences in full (for all elements of the calculation), as well as the obligation to identify financial results for a certain period, which is set by this financial instrument [9].

Having considered the existing definitions and properties of a futures contract, we came to the conclusion that the most complete disclosure of the essence of futures for agricultural crops is the following definition:

Crop futures are a derivative financial instrument on the stock exchange, which provides for the obligation of its seller or buyer to periodically transfer amounts to the other party depending on changes in the market price of grain, and (or) the occurrence of the obligation to supply grain in due time [8].

With this definition, we emphasize the affiliation of futures to exchange-traded derivatives, which more fully reflects its economic nature [7].

By agricultural crops we mean grain futures, which cover a whole group of futures for: wheat, barley, corn, barley, oats, millet, rice, buckwheat, peas and legumes (soybeans, etc.).

In general, the market for crop futures can be defined as a set of economic and financial relations of its participants, on the issue and circulation of futures for crops [6].

In the developed market, futures play their role through functions. Let's highlight the main functions of futures for crops [1]:

— pricing function (crop futures allow you to create a price indicator that market participants focus on). The essence of this function follows from the function of setting the price of the underlying

asset in the future proposed by J.M. Keynes. The information provided by the futures market reduces the transaction costs of obtaining information on the price of grain, as it reflects the expectations of many business units. This will reduce the monopoly of large firms on the ownership of information, allowing it to medium and small entities. This feature is important because it allows futures market participants to set future prices, so they can plan their activities. Thus, futures prices are an indicator of future prices. Currently, for many companies, the indicator of grain prices are futures prices on leading grain exchanges in the United States, France, England;

— hedging function (insurance of risks of agricultural producers). The essence of this function is manifested in the distribution and redistribution of risk of market participants by transferring it to other participants. The risk associated with expected changes in the prices of the underlying asset is eliminated by temporarily opening a position in one market and the opposite position in another, and these markets must be economically interconnected. This activity is called hedging, and participants who use derivative financial instruments to reduce price risk are called hedgers. This feature is the most important in the grain futures market. According to the organizers of the auction, they operate precisely in order to create a financial instrument that allows agricultural producers to hedge the price risk inherent in the grain market;

— incentive function (aimed at increasing the number of concluded agreements by simplifying calculations for them and the development of the grain market) [4];

In order for crop futures to start performing their functions in full, further development of the exchange market for agricultural products is needed.

Currently, the derivatives market is the fastest growing segment of the financial market in the world. The financial market is a system of economic relations, related cash of individuals and legal entities and their redistribution on a commercial basis between different sectors of the economy [3].

Conclusions. Thus, the study defined the concept of grain futures for agricultural products, which fixes the affiliation of this financial instrument to the number of derivatives and discloses its content through the binding relationship of seller and (or) buyer on the periodic transfer of money to the clearing house depending on the change in the market price of grain or upon the occurrence of an obligation to supply grain within the specified period.

In general, the market for crop futures can be defined as a set of economic and financial relations of its participants, on the issue and circulation of futures for crops, refers to commodity exchange derivatives of financial instruments of the first order, forward type with the underlying asset − grain.

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METHODS FOR ESTIMATING THE SHADOW ECONOMY AND INSTRUMENTS FOR DE-SHADOWING THE FISCAL SECTOR

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ABSTRACT

The subject of research is a set of theoretical and methodological provisions and applied aspects of assessing the level of the shadow economy and de-shadowing of this process. The study is based on the definition of existing methods for assessing the level of the shadow economy; clarifying the tools used in the process of assessing the shadow economy, identifying ways to de-shadow the fiscal sector and identifying tasks for the implementation of leveling this process. It is established that there are four most effective methods of estimating the size of the shadow economy: the method of "population expenditure - retail trade"; financial method; monetary method; electric method. The results of the study made it possible to propose tools for de-shadowing the fiscal market, which are to increase the level of financial literacy of the population; formation of electronic databases of violators (subjects of the shadow economy); improving the methodology for assessing the scale of the shadow economy; introduction of a tax on international speculative transactions; reforming the state's anti-corruption policy; ensuring the principle of tax justice (equality) for taxpayers; provide an effective fiscal management of residents who use offshore jurisdictions; raising the level of legal culture of the population; legalization of shadow activity (subject to its legality); improvement of the "ProZorro" system; counteraction to financial crimes, "laundering funds"; introduction of tax amnesty and capital amnesty, etc. The purpose of the article is to substantiate the existing methods of assessing the shadow economy and to develop practical recommendations on ways and tools to de-shadow the fiscal sector. Different methods of estimating the level of the shadow economy are used at the macro- and microeconomic levels. It was found that the assessment of the shadow economy by existing methods in Ukrainian practice is not accurate, as its reliability is influenced by factors: unreliability, concealing or providing false information, the complexity of tracking "traces" of economic crimes, the scale of shadow economic activities and more. Identifying ways and measures to de-shadow the fiscal sector will reduce shadow phenomena in the domestic economy and in the fiscal sector, in particular.

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1. **Introduction.** In conditions of constant economic fluctuations, global shadowing of the economy, the negative impact of the global financial crisis, the rapid spread of the COVID-19 pandemic and the introduction of appropriate restrictions that adversely affect the functioning of state processes, interstate relations in general, declining economic potential, growing public discontent, new

socio-economic threats [1, 2], it is necessary to introduce new effective methods of de-shadowing the domestic economy.

The research problem is formulated as follows: since ensuring the process of de-shadowing of the domestic economy today is a priority of the state, it is necessary to explore existing methods of assessing the shadow economy, ways and tools to de-shadow the fiscal sector to further develop mechanisms to combat its spread.

The logic of presenting the material is to clarify the existing methods of assessing the shadow economy at its various levels (macro and micro). This definition has got estimation methods of the given economy (direct, indirect). Establish official methods to determine the extent of the shadow economy. Identification of the most effective methods for diagnosing this phenomenon. Outlining tools, ways and measures to minimize the shadow economy. It is substantiated that there are no universal tools to counteract the shadowing of the economy in the world. The state or region must develop tools that are specific to the conditions in which they currently find themselves.

One of the effective and relevant tools, in our opinion, is the introduction of a system of tax amnesty and capital amnesty. It is argued that based on the problems and realities of today, it is necessary to introduce a mechanism of capital amnesty using block chain technology. Ways and measures to de-shadow the economy have been developed. The doctrine staging of de-shadowing of the country's economy is proposed and the basic principles of this doctrine are highlighted. This is a continuation of the study by E. Borshchuk and M. Zaverukha [3], whose give an idea of the formation of a normative act, which will set out approaches to the process of de-shadowing and the sequence of its introduction into practice.

2. Methods for assessing the shadow economy of the state

The shadowing of the economy is considered a negative phenomenon for the functioning of modern states and disrupts their effective development, so an important issue is a comprehensive assessment of the real scale of the shadow economy for the development and implementation of effective mechanisms for de-shadowing. According to the Methodical recommendations for calculating the level of the shadow economy, approved by the order of the Ministry of Economy №123 of 18.02.2009, “Shadow economy is an unregistered economic activity of an economic entity, which is characterized by minimization of costs for production of goods, performance of works and provision of services, tax evasion, fees (mandatory payments), statistical questionnaires and submission of statistical reports, the consequence of which is a violation of statutory norms (the level of the minimum wage, working hours, working conditions and safety, etc. "(On approval of Methodical recommendations for the level of the shadow economy, 2009) [4].

Assessing the scale of the shadow economy is a complex, multi-stage process that requires the use of a variety of methods. The complexity of the process is related to the concealment of information necessary for calculations.

To measure the scale of the shadow economy, various methods are used, which are divided into two groups: direct (micro-level methods) and indirect or mediate (macro-level methods).

Indirect (mediate) methods – these are macro-level methods based on the analysis of macroeconomic indicators, comparable information, data from different sources and the study of mass statistical patterns that allow a more accurate assessment of the extent of development and development of the shadow economy.

Direct methods (micro-level methods) are based on the collection of statistical data in accordance with the requirements of the legislation that allow to study the structure of the shadow economy.

The macro-level methods include:

1. Polls, sample surveys - allow you to assess the presence and scale of shadow activity in the studied sector, region.

2. Methods of open inspection - during the inspections control bodies detect and stop relevant violations of the law (tax, customs, banking, antitrust, currency, trade rules, fire safety, sanitary norms, etc.), which are entered into accounting and statistical data.

3. Special methods of economic and legal analysis - experienced specialists (economists, accountants, auditors, etc.) detect traces of economic crimes. These methods are divided into 3 subgroups:

– method of accounting analysis - research of accounting (balance sheet analysis, evaluation, calculation, inventory, etc.) in order to identify accounting violations, inconsistencies, deviations;

- method of documentary analysis - research of accounting documents to identify specific inconsistencies in their design;

- method of economic analysis - analysis of economic indicators to identify the causes of shadowing activities;

- method of comparison - comparison of certain economic indicators of the object of study to identify differences that may characterize the "money funds" and concealment of real income;

- method of stereotypes - the study of non-standard (unusual) relationships between economic indicators that signal the presence of shadow activity of the object of study;

- method of special calculation indicators - a special calculation indicator is determined, the change of which indicates the implementation of shadow operations on the object of study;

- the method of corrective indicators - the comparison of economic indicators of the object of study with environmental factors to identify discrepancies and confirm the existence of shadow transactions.

Macro-level methods include:

1. Method of discrepancies - discrepancies in official statistics are investigated to identify hidden income and confirm the facts of shadow activity.

2. Structural method - on the basis of the received information on the sizes of shadow economy in various spheres regularities for realization of an estimation of shadow economy for other spheres are investigated.

3. Special methods - according to employment indicators (based on the productivity of the sector) and the method of stable interconnections (the difference between the real one, taking into account the shadow economy and the official GDP) determine the volume of the shadow economy.

4. Monetary methods - analysis of processes related to the demand for money, their turnover and comparison with the base period to track shadow cash transactions. There are 4 main variants of this method:

- Guttmann's method (study of the ratio of cash and deposits);

- Feige method (differs from the first assumption that in the shadow sector compared to the official velocity of money is higher by 10%);

- the first modification of the Guttmann method (the ratio uses the total money supply, not the amount of cash);

- the second modification of Guttmann's method (assumption - the dynamics of the ratio of time deposits, demand deposits and total money supply reflects the volume of the shadow economy) [5].

Econometric method - monitors the movement of cash to detect the presence of shadow activity in industrialized countries.

5. Method of estimating unaccounted value - by means of random checks and observations the authenticity of official accounts is checked, the change of cost indicators is monitored in the process of creating additional value to identify contradictions, relevant violations characterizing the presence of shadow activity on the object of research.

In general, the assessment of the scale of the shadow economy by these methods, in our opinion, is not accurate, as it is hindered by certain factors: inaccuracy, concealment or provision of false information, the complexity of tracking economic "traces" of economic crimes, the scale of shadowing.

In Ukraine, there are 2 official methods for estimating the level of the shadow economy: the methodology of the State Statistical Service and the methodology of the Ministry of Economic Development, Trade and Agriculture of Ukraine.

The methodology for assessing the scale of the shadow economy was developed by State Committee on Statistics (USCS) on the basis of the Program of Development of the System of National Accounts № 475 of April 7, 2003 [6].

The main methodology of the Ministry of Economy, Trade and Agriculture of Ukraine for calculating the level of the shadow economy was approved by the order "On approval of the Methodical recommendations for calculating the level of the shadow economy" № 123 of 18.02.2009.

There are 4 most effective methods for estimating the size of the shadow economy, which contains the methodology of the Ministry of Economic Development, Trade and Agriculture of Ukraine:

1) The method of "population expenditure - retail trade" - a direct method, which is to identify the excess of consumer monetary expenditures on goods over the total sales of these goods in the official (legal) market.

2) The financial method - an indirect method, which consists in determining the trends of changes in the proportions between the value of goods (works, services) used in the production process and the gross income of enterprises in the state as a whole or in a particular economic activity.

3) Monetary method - an indirect method that consists in determining trends in the ratio of cash to bank deposits in the study period relative to the baseline.

4) Electric method - an indirect method that consists in comparing the growth of domestic electricity consumption with the growth of real GDP, as it is assumed that the volume of such growth should coincide. Thus, if the growth of domestic electricity consumption exceeds the growth of real GDP, it indicates the use of electricity in the shadow economy [4]. The Ministry of Economic Development, Trade and Agriculture of Ukraine also uses the method of enterprise loss - to determine the marginal (minimum and maximum) coefficients of the shadow economy as a share of GDP, within which is the level of the shadow economy.

The state policy of de-shadowing the domestic economy is an integral part of the general state policy. Since the main reasons for the shadowing of the economy include: high level of corruption, inconsistency of the quality of public functions with the level of tax burden and deviant behavior of taxpayers, the state policy of de-shadowing the economy should focus on counteracting (eliminating) these reasons.

It should be noted that most of the measures proposed earlier by scientists and politicians to de-shadow the domestic economy were not implemented in full or only partially [7]. The reason for such inaction on the part of the state, in our opinion, is the interest of some officials and oligarchs in the further functioning of shadow activities and ineffective public policy.

Thus, the de-shadowing of the economy is a set of actions by the state aimed at maximizing the elimination (minimization) of the shadow sector of the economy and preventing the probability of further shadowing.

3. Results and Discussion

3.1 Tools for de-shadowing the fiscal sector

Tools for de-shadowing the economy, including the fiscal sector, in modern conditions can be:

- increasing the level of financial literacy of the population;
- formation of electronic databases of violators (subjects of the shadow economy);
- improving the methodology for assessing the scale of the shadow economy;
- introduction of a tax on international speculative transactions;
- reforming the anti-corruption policy of the state;
- ensuring the principle of tax justice (equality) for taxpayers;
- introduction of effective mechanisms of tax regulation of residents using offshore jurisdictions;
- raising the level of legal culture of the population;
- legalization of shadow activity (subject to its legality);
- improvement of the "ProZorro" system;
- counteraction to financial crimes, "funds money;
- tax amnesty and capital amnesty, etc.

It should be noted that there are no universal tools to counter the shadow economy in the world. Each country or region must find or develop its own tools according to current conditions.

One of the effective and relevant tools, in our opinion, is the introduction of a system of tax amnesty and capital amnesty.

As the tax amnesty system is currently under consideration and implementation, we will present a mechanism for implementing a capital amnesty system using block chain technology.

Therefore, to reduce the level of the shadow economy, combat tax evasion and corruption, promote economic development of the state, we consider it appropriate to introduce a mechanism for the functioning of the capital amnesty system in Ukraine using block chain technology. This mechanism provides for *the purpose of*: formation of preconditions for the return of funds and property values exported from the territory of Ukraine, legalization of income of legal entities and individuals (including from shadow activities; *objects:* currency values of residents (including income) and objects of property of residents located outside the customs border of Ukraine and on its territory, regardless of the method of acquisition; *subjects* – residents of the state; *functions:* reducing the level of Ukraine's shadow economy, returning capital to the legal field, reducing the level of social injustice, balancing the financial

interests of the state and taxpayers; implementation of the latter is based on the *principles:* universality, binding, transparency, equality, digital priority; *directions of implementation of the specified mechanism*: improvement and entry into force of the Law of Ukraine "On Capital Amnesty", development and approval of the form of "zero declaration", maintaining registers using block chain technology and *expected results from the introduction of capital amnesty:* return of capital to the country, transparency of capital movements in the country; reducing the scale of shadowing of the domestic economy; income legalization of the subjects of the capital amnesty system; increase of revenues to the state budget; reducing the level of corruption, illicit enrichment, increasing macroeconomic indicators.

Summarizing the work of scientists economists [8-15], we propose ways to de-shadow the fiscal sector: combating the illegal use of offshore zones; improvement of currency control instruments in the state; reforming state systems; introduction of the open e-government model; ensuring transparency of work of state institutions, banks; Improving the system of electronic registers; development of an effective mechanism for refunding funds from abroad; creation of a system to increase the level of financial literacy of the population and public confidence in the state; support for small and medium business; implementation of measures to increase the investment attractiveness of the country.

The existence and spread of the shadow economy has a negative impact not only on the economic system of the state, but also on social processes, which in turn leads to imbalances in public areas.

The state policy of de-shadowing the fiscal sector is aimed at improving socio-economic indicators, the country's financial security, and level of live standards, regulating commodity-market relations, improving the investment climate, combating corruption (bureaucracy), combating tax evasion and more.

We share the opinion of M. Kuznetsova and O. Dubrovina that “ensuring the de-shadowing of the economy should be one of the components of state policy to strengthen and develop the country's economic system, aimed at harmonizing the interests of the state and the citizen, creating the most favorable conditions for business entities in legal field” [16].

3.2 Measures to de-shadow the fiscal sector.

The main measures to de-shadow the economy, in our opinion, should be:

- development of new effective mechanisms to combat corruption ("cleansing of power") and tax evasion;
- improvement of the system of fiscal administration;
- introduction of a system of "amnesty" of capital to legalize the income of shadow activities;
- introduction of additional incentives for legalization of informal activities by shadow economy entities;
- creating favorable conditions for business operation;
- implementation of measures to increase public confidence in the state, the level of financial and legal literacy;
- expansion of the system of non-cash payments and ensuring control over the target direction of such;
- improving control over foreign economic activity;
- optimization of procurement mechanisms;
- improving legislation to combat economic crimes (strengthening the responsibility of offenders);
- monitoring of offshore zones;
- ensuring the transparency of the real sector of the economy;
- use of modern financial technologies;
- maintaining all state registers using block chain technology.

We support the idea of creating a National Doctrine of de-shadowing of the economy, proposed [3]. They marked the staging of the formation of the doctrine of de-shadowing in five stages: the first - the definition of scientific approaches to substantiate the doctrine, its principles; development of a state document that defines the most important parameters of the doctrine; the document is approved by the parliament of Ukraine; the second is the development of a strategy (for the long term) and tactics of the doctrine of de-shadowing. Policy and tactics should include a set of adaptive measures of state influence to reduce the size of the shadow economy; the third - the formation of specific programs and mechanisms for implementing the policy of de-shadowing (sequence and methods of action of relevant bodies to regulate relations in society to improve living standards; fourth - the definition of basic criteria

for the effectiveness of de-shadowing policy; fifth - the organization of the system of implementation and control of programs to de-shadow the economy - implementation in practice.

The main purpose of the National Doctrine of De-Shading of the Economy is the formation of a single fundamental document, which will define all the basics of de-shadowing processes as a multilevel system.

The doctrine must have all the components of a state act: general provisions; main goals, principles of de-shadowing policy of the economy; priorities of the state policy of de-shadowing, the concept of carrying out social and economic reforms taking into account the problems of de-shadowing; priorities of the state policy of de-shadowing, the concept of carrying out social and economic reforms taking into account the problems of de-shadowing; state standards for each stage of doctrine implementation; the procedure for public monitoring and assessment of the achievement of the level of established indicators of de-shadowing; responsibility for the implementation of the provisions of the doctrine, the order of preparation and decision-making on amendments to the doctrine; interconnection with the problems of national security of Ukraine [3]. There must be a close relationship between all components of the doctrine for a de-shadowing policy to be effective.

It should be noted that the main principles of the National Doctrine of De-Shading of the Economy are:

- the principle of social justice - ensuring a fair and impartial distribution of national wealth, GDP;
- the principle of objectivity - taking into account all the factors that affect the quantitative and qualitative indicators of economic activity;
- the principle of determinism - characterizes the causal links between phenomena;
- the principle of coherence - taking into account the interests of other types of public policy;
- the principle of transparency - regulatory regulation of procedures for public authorities [3].

The doctrine of de-shadowing will become one of the main conditions for improving the country's economy, the level of financial and national security of the state, the level and quality of life, the level of observance of human rights and freedoms, promote further economic development, investment climate and more.

Thus, we believe that in order to promote the socio-economic development of the country, improve the investment climate, increase national security, develop interstate relations and business, it is necessary to develop and implement mechanisms (measures, programs, reforms) to de-shadow the domestic economy and, accordingly, elimination of the main factors of its appearance and spread.

Conclusions. The study of methods for assessing the shadow economy, tools and ways to de-shadow the fiscal sector made the following conclusions:

1. Methods of estimating the scale of the shadow economy at the micro and macro levels are studied. The main advantages and disadvantages of methods for estimating the scale of the shadow economy are schematically presented. It was found that in Ukraine there are 2 official methods for assessing the level of the shadow economy: methodology of the State Statistical Service on the basis of the Program of development of the system of national accounts № 475 from 07.04. 2003 and the methodology of the Ministry of Economic Development, Trade and Agriculture in accordance with the approved Order "On approval of Methodical recommendations for calculating the level of the shadow economy" № 123 from 18.02.2009.

2. The tools of de-shadowing of the economy in modern conditions are indicated. It was found that there are no universal tools to counteract the shadowing of the economy in the world. A mechanism for the introduction of a capital amnesty system using block chain technology as a tool for de-shadowing the domestic economy, which structurally consists of the following elements: objects; subjects; goal; system of principles and functions; directions and expected results from implementation. The introduction of the capital amnesty mechanism in Ukraine is expected to increase macroeconomic indicators, return capital to the country, ensure transparency of capital movements, increase state budget revenues, legalize revenues of capital amnesty entities, reduce corruption and shadow the domestic economy, and so on.

3. The ways and main measures of de-shadowing of the fiscal sector in modern conditions are presented. The importance of developing the National Doctrine of De-Shading of the Economy, proposed by Borshchuk and Zaverukha, is proved and the main stages of its formation are schematically presented. The main principles of the doctrine of de-shadowing are indicated: the principle of social justice; the principle of objectivity; the principle of determinism; the principle of

consistency; the principle of transparency. We believe that the introduction of all these methods (ways, directions) of de-shadowing of the domestic economy will have a positive effect on the functioning and efficiency of state processes in the future.

The prospect of further research is to improve approaches to assessing the shadow economy, mechanisms to minimize the impact on the fiscal sector and the development of techniques and technologies for de-shadowing economic processes in the country.

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КОНЦЕПТУАЛЬНІ ЗАСАДИ ДЕРЖАВНОГО РЕГУЛЮВАННЯ ФОРМУВАННЯ ТА ЗБЕРЕЖЕННЯ ЕКОЛОГІЧНО БЕЗПЕЧНОГО СЕРЕДОВИЩА В УКРАЇНІ

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ABSTRACT

The article has substantiated regulation peculiarities of ecologically safe environment formation and preservation. The dependence of its effectiveness on the institutional and regulatory support of measures for maintaining the current state of the environment and preserving the natural resource potential of Ukraine has been determined. The essence of the Sustainable Development Goals "Ukraine-2030", which determine the priorities of achieving economic, social and environmental development of the country, has been clarified. It has been established that at this stage in the system of environmental management there is a discrepancy between the new tasks and the old structure, not meant for performing such tasks. Conceptual regulation bases of ecologically safe environment formation and preservation as one of social stability and economic development factors have been defined.

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Вступ. Екологічна безпека є одним із пріоритетів у визначенні мети та завдань соціально-економічної політики сучасної держави. Така методологічна позиція задекларована як в національному законодавстві, так і в нормативних документах, що регулюють принципи та підходи реалізації стратегії державної екологічної політики й національної безпеки. Умовами прогресивного розвитку в галузі господарювання завжди є безпека та відповідальність. Обов'язковою умовою розвитку стає змістове визначення, що робити і що необхідно досягти. Запорукою досягнення належного рівня екологічної безпеки має стати здатність природоохоронної системи країни своєчасно й ефективно реагувати на виклики сучасності, пов'язані як із зовнішніми, так і з внутрішніми ризиками та загрозами в екологічній сфері.

Мета статті – здійснити спробу наукового обґрунтування державного регулювання формування й збереження екологічно безпечного середовища**.**

Матеріали та методи. Питанням державного управління у сфері екології та вирішенню проблеми створення комфортного середовища для життя і діяльності людей присвятили свої

праці В. Андронов, Ю. Боковикова, С. Домбровська, Л. Ємец, В. Ковальчук, Т. Козаченко, О. Колєнов, О. Олефіренко, А. Омаров, П. Фесянов та ін. Але важливість напрямку дослідження та значимість його результатів у науковому і практичному аспектах спонукає продовжувати розробку даної проблеми.

Отримані результати. З огляду на результати аналізу стану природно-ресурсного потенціалу та результативності нормативно-правового забезпечення державного регулювання екологічної безпеки для досягнення цілей сталого розвитку слід зазначити, що за часи незалежності України внаслідок поступових адміністративних змін у країні сформувалася поліцентрична система відповідних державних органів. Трансформація торкнулася структури, завдань та функцій органів державної влади, відбувся перерозподіл компетенції, а переважна більшість відповідних контролюючих органів отримали нові повноваження. Наразі триває процес уточнення й розмежування прав та обов'язків відповідальних за екологію установ та перегляд всієї системи інституційного забезпечення у даній сфері. Наслідком реалізації такого сценарію має стати внесення змін до природоохоронного законодавства України.

Слід наголосити, що в науковій літературі цілком справедливо наголошувалося на тому, що система органів державного контролю у сфері охорони довкілля характеризується необґрунтованим дублюванням повноважень, відсутністю чіткого розмежування підконтрольних об'єктів між відповідними контролюючими органами тощо [1]. Як зазначають А. Гетьман, М. Шульга і В. Попов, суттєвих організаційних змін зазнають відповідні органи державного контролю у процесі поетапного впровадження в Україні адміністративної реформи [2].

Сьогодні в Україні в системі державного управління відбувається посилення ролі функцій, пов'язаних із забезпеченням екологічної безпеки. Така позиці базується на політичних, економічних, соціальних, екологічних, моральних і культурних цінностях, властивих українському суспільству, і визначає спрямованість на становлення і розвиток природоохоронної діяльності, розробку та прийняття нормативно-правових документів з метою наближення національного законодавства до європейського, здійснення контролю за діями органів влади через громадські ради, ухвалення та реалізації державних рішень при проведенні заходів екологічного нагляду (контролю) за нераціональним використанням природних ресурсів.

Розуміння того, як держава повинна забезпечувати екологічну безпеку, має певні відмінності. Але зазначений напрям державної політики та механізми її забезпечення, форми, методи і засоби реалізації у практиці суспільних відносин наразі не мають завершеного характеру й потребують їх вирішення на новому якісному рівні. Враховуючи різні погляди та думки про управлінські функції у природоохоронній системі та спираючись на наукові праці вітчизняних вчених, можна зробити висновок про існування мотивації в постійному пошуку найбільш ефективної моделі управління у зазначеній сфері. Така модель повинна мати науково обґрунтовану конструкцію системи державного управління формуванням і збереженням екологічно безпечного середовища та, з огляду на принципи, напрямки, завдання діяльності органів управління на національному, регіональному та місцевому рівнях, бути спроможною, у разі її використання, попереджати й мінімізувати загрози національній безпеці, а відтак сприяти інтеграції у кращі світові системи екологічної безпеки.

Слід зазначити, що науково-експертне середовище та громадські організації України вносять свої пропозиції щодо забезпечення екологічної безпеки й обговорюють питання реформування екологічного нагляду (контролю), крім того, ведуться дискусії, як протистояти зовнішнім і внутрішнім загрозам та мінімізувати корупційні ризики в системі природоохоронної діяльності. Це обумовлено відсутністю цілісної сучасної концепції державного управління екологічною безпекою та системи стратегічного планування.

Дане питання знайшло своє відображення в Стратегії національної безпеки України, де, зокрема, наголошено: «Дедалі більше людей відчувають наслідки зміни клімату та зростання техногенного навантаження на навколишнє природне середовище. Збільшуються кількість та масштаби надзвичайних ситуацій природного і техногенного характеру. Виснажується екосфера, зростає споживання невідновлюваних ресурсів» [3]. У цьому документі наголошується, що завдання охорони природи мають бути реалізовані за такими напрямками: забезпечення екологічної безпеки, створення безпечних умов життєдіяльності людини, захист особи, суспільства та держави від правопорушень, зокрема корупційних, забезпечення відновлення порушених прав, відшкодування заподіяної шкоди шляхом розроблення

документів щодо планування у сферах національної безпеки і оборони, які визначатимуть шляхи та інструменти її реалізації, екологічної безпеки та адаптації до зміни клімату.

Отже, державна політика охорони природи розглядається як невід'ємна складова стратегії національної безпеки України. Тому формування концептуального бачення і відповідно наукового обґрунтування принципів і підходів до реалізації державної політики природоохоронного напрямку, забезпечення екологічної безпеки та вирішення глобальних проблем сьогодення потребують розробки відповідних заходів. Формою реалізації такого підходу може бути підготовка концепції державного управління формуванням і збереженням екологічно безпечного середовища і, на її основі, створення нормативно-правового, інституційного, структурно-організаційного, фінансового середовища для збереження та розумного використання природного потенціалу країни. Сьогодні державою визначено, що національним стратегічним напрямком є перехід до сталого розвитку та формування умов для інтеграції в міжнародні безпекові системи. Україна має на меті запровадження такої моделі розвитку природоохоронного управління, де економічний, соціальний, екологічний напрямок не конкурували б між собою щодо пріоритетності, а об'єднувались однією метою щодо досягнення екологічно збалансованого господарювання та захисту довкілля в системі національної безпеки.

З метою визначення наукових підходів до розробки та обґрунтування концептуальних засад публічного управління створенням безпечного в екологічному плані середовища доцільно з'ясувати зміст основних термінів і понять.

Так, в «Енциклопедії державного управління» поняття «концепція» визначено як сукупність наукових поглядів, формування змісту та напрямку розвитку можливих процесів з реалізації державних політик для досягнення стратегічних цілей шляхом прийняття управлінських рішень з обґрунтуванням необхідності вирішення конкретних завдань. Тлумачення поняття «концептуальні засади» у свою чергу розглядається як науково-філософське бачення в розумінні процесів, які були започатковані раніше, але не реалізувалися або реалізувалися неповністю, видозмінюються сьогодні та будуть доповнюватись пізніше, але на певному відрізку часу, і є найактуальнішими [4].

У цьому контексті слід погодитися з А. Омаровим, який, спираючись на концепції теорії систем, наголошує, що основну увагу має бути приділено фінансово-економічному, організаційному та інформаційному механізму здійснення державної політики забезпечення екологічної безпеки. Зокрема, він зазначає, що екологічна безпека – це, вочевидь, складова національної безпеки, що забезпечує захищеність життєво важливих інтересів людини, суспільства, довкілля та держави від реальних або потенційних загроз, що створюються антропогенними чи природними чинниками стосовно навколишнього середовища. Розроблення державної політики забезпечення екологічної безпеки – це шлях до вирішення екологічних та техногенних проблем та запобігання їм [5].

На думку Ю. Єфімова, екологічна безпека є складовою національної безпеки. Формування екологічної політики полягає в розробці відповідних напрямків дій для вирішення виявленої проблеми. Рішення щодо складових екологічної політики (наприклад, щодо питань хімічної безпеки) також можуть зосереджуватися на технічних питаннях, зрозумілих лише тим, хто тісно пов'язаний із конкретною політикою чи програмою. Звісно, загальний характер розробки політики та етапи, якими рухається більшість екологічних політик, є більш зрозумілими [6].

Керуючись висновками науковців (М. Хілько, А. Качинський, М. Реймерс) щодо сутності поняття «екологічна безпека» й дотримуючись зазначеного вектора, В. В. Бірюков визначає забезпечення екологічної безпеки як процес управління системою природоохоронного нагляду і контролю у сфері національної безпеки, за державними і недержавними інституціями, щодо додержання вимог природоохоронного законодавства для прогресивного розвитку держави і суспільства [7, с. 86].

З огляду на представлений методологічний підхід та враховуючи напрацювання щодо регулювання суспільних відносин в екологічній сфері, пропонуємо таке визначення поняття «концептуальні засади державного регулювання в забезпеченні екологічної безпеки»: це процес взаємодії суб'єктів управління з органами публічної влади та інститутами громадянського суспільства, які формують систему екологічного моніторингу та на його основі надають рекомендації щодо запобігання (мінімізації) загроз і ризиків у природоохоронній галузі для прийняття і реалізації управлінських рішень у системі національної безпеки.

Окремо зазначимо, що на даний час у жодному нормативно-правовому документі, який регулює умови розвитку екологічної політики в Україні, не передбачено використання концепту «концепція управління екологічною безпекою». Тому пропонуємо визначати його як «концепція управління екологічною безпекою» для подальшого уточнення, деталізації та поглиблення пізнання найбільш небезпечних зовнішніх і внутрішніх загроз національній безпеці у сфері захисту довкілля та природних ресурсів.

Актуальність розроблення даної концепції полягає у трансформації діючих і створенні нових організаційних структур управління, спроможних ефективно функціонувати та забезпечувати економічний розвиток в умовах ринкового середовища під час екологізації всіх сфер суспільного життя, що пов'язано з тенденцією і характером змін загроз та виникненням ризиків в екологічній сфері, зокрема техногенного походження. це свідчить про зміщення пріоритету економічного розвитку держави як у бік нарощування промислового виробництва, так і нераціонального використання природних ресурсів і недостатнього врахування в національному законодавстві вимог щодо взаємовідповідальних стосунків між основними суб'єктами природоохоронних відносин – громадянами, суспільством, державою, владою, бізнесом.

Результат такого ставлення до навколишнього природного середовища та природи у галузях промисловості, сільського господарства, енергетичній сфері призведе до незворотної деградації довкілля з одночасним зростанням ризиків виникнення надзвичайних ситуацій, насамперед техногенного характеру. Важливим чинником забезпечення стабільного розвитку країни має бути встановлення довгострокових зобов'язань між суб'єктами господарювання, державою та суспільством, які базуються на принципах відповідальності всіх і кожного.

На основі існуючого розуміння важливості екології для досягнення цілей сталого розвитку та створення необхідних умов для безпечного розвитку суспільства, сформулюємо власне розуміння місії та структури можливої концепції управління екологічної безпекою.

До керівних принципів, які мають стати фундаментальною основою концепції управління екологічною безпекою, слід віднести:

а) *верховенство права.* Дотримуватись публічності та прозорості при обговоренні, прийнятті законів у сфері захисту довкілля та природних ресурсів і надання можливості суспільного контролю щодо їх виконання. Підвищення довіри громадян до органів державної влади шляхом рівності та відповідальність перед законом усіх учасників природоохоронної діяльності, а також інституцій, які задіяні в реалізації державної екологічної політики. Врахування розвитку соціальних мереж щодо їх використання в разі правопорушень природоохоронного законодавства і бездіяльності органів державної влади, органів місцевого самоврядування, посадових і службових осіб, які не реагують на правопорушення в екологічній сфері, та забезпечення можливості захисту судом конституційних прав і свобод людини і громадянина на підставі Конституції України [8] як документа найвищої юридичної сили;

б) *належне врядування.* Забезпечити належне дотримання органами державної влади на національному і регіональному рівні, органами місцевого самоврядування – на місцевому рівні принципу публічності й відкритості використання природно-ресурсного потенціалу та запровадити контроль і підзвітність РНБО щодо усунення системних правопорушень в екологічній сфері, які несуть загрози та ризики національній безпеці держави. Їх вивчення та аналіз слід доручити Департаменту національної безпеки та оборони Офісу Президента з подальшим інформуванням керівництва держави щодо їх усунення. Запровадження збалансованості в соціальному, економічному, екологічному розвитку шляхом переходу до суспільної системи управління екологічною безпекою та реалізації державної екологічної політики за участю всіх зацікавлених сторін на всіх рівнях влади;

в) *соціальне партнерство.* Залучення бізнесу до формування та реалізації державної екологічної політики на всіх рівнях на правах соціального діалогу та партнерства. Запровадження корпоративної соціальної відповідальності та державно-приватного партнерства щодо виконання загально взятих на себе зобов'язань як державою, так і бізнесом із захисту довкілля та раціонального використання природних ресурсів, посилення співпраці з міжнародними організаціями для залучення інвестицій у природоохоронну сферу;

г) *громадський контроль*. Забезпечувати участь громадян у процесі прийняття управлінських рішень та здійсненні цивільного контролю через громадські об'єднання. Запроваджувати належні процедури для інформування, консультацій населення про стан

навколишнього природного середовища, використання інформаційних важелів для формування у міжнародної спільноти позитивного іміджу України та її громадян.

Місією такої концепції є розробка основних положень, напрямків, завдань і механізмів для здійснення функцій управління екологічною безпекою у сфері охорони навколишнього природного середовища та природокористування для захисту національних інтересів громадян, суспільства, держави, влади та бізнесу.

Здатність держави, влади, суспільства і громадян своєчасно давати ефективні відповіді на виклики часу, конструктивно взаємодіяти заради встановлення порядку в природоохоронній сфері, що перетинається з соціальною та економічною сферами, які за своєю природою різняться, але по суті є партнерами в досягненні спільної мети щодо забезпечення екологічної безпеки, є дуже важливою. З огляду на це визначимо ключові напрямки вдосконалення існуючої системи управління:

а) *напрямок розвитку.* Становлення конструктивних, солідарних, взаємовідповідальних відносин між основними суб'єктами природоохоронних відносин – громадянами, суспільством, державою, владою, бізнесом, гарантування базового рівня екологічної безпеки за її основними складниками, забезпечення сталого розвитку країни, проведення структурних реформ на національному, регіональному та місцевому рівнях, забезпечення економічного зростання на умовах раціонального використання природних ресурсів та запровадження екологічно безпечних технологій, створення сприятливих умов для ведення господарської діяльності та практичних підходів до формування та реалізації державного управління у сфері екологічної безпеки;

б) *напрямок безпеки.* Гарантує належне забезпечення безпеки держави шляхом створення системи прогнозування, запобігання та оперативного реагування у разі виникнення надзвичайних ситуацій природного і природно-техногенного походження, забезпечення захисту кордонів, забезпечення екологічного супроводу в секторі безпеки та оборони, впровадження ефективних механізмів протидії корупції. Пріоритетом є безпека життя та здоров'я людини, що неможливо без ефективної системи охорони об'єктів підвищеної небезпеки;

в) *напрямок взаємодії.* Передбачає досягнення поставлених цілей і реалізацію державної екологічної політики через взаємообумовлений процес щодо прийняття екологічних рішень без будь-якого тиску з боку жодного із суб'єктів партнерства. Органи державної влади, відповідальні за забезпечення екологічної безпеки, розробляють природоохоронні заходи, формулюють їх у вигляді замовлення на залучення бізнесу до захисту довкілля та гарантують громадянському суспільству можливість брати участь у процесі вибору більш ефективних варіантів рішення екологічних проблем;

г) *напрямок відповідальності.* Полягає в гарантуванні конституційного права людини і громадянина на безпечне довкілля та безпеку життєдіяльності населення шляхом зобов'язання забруднювачів платити за шкоду, яку вони завдають здоров'ю людини та довкіллю, плата має бути адекватною заподіяній суспільству шкоді. Забезпечити цільове спрямування відшкодування на відновлення екосистем та охорону здоров'я населення з урахуванням надходження коштів до місцевих бюджетів з дієвим контролем їх використання згідно з децентралізацією влади.

У цьому контексті розглянемо реалізацію пріоритетних напрямків, які взаємопов'язані між собою з принципами управління екологічною безпекою, що зумовлює визначення нових завдань з урахуванням вимог сучасності, а саме:

а) досягнення максимальної ефективності державного управління в природоохоронній сфері, захист екологічних інтересів у системі національної безпеки, реалізація державної екологічної політики, збереження та розвиток природно-ресурсного потенціалу з урахуванням екологічних чинників на засадах сталого розвитку, створення системи аналізу загроз та ризиків шляхом прогнозування, планування і здійснення запобіжних заходів щодо ймовірних чинників, та їх усунення;

б) забезпечення органами природоохоронного інспектування та органами державного нагляду (контролю) в екологічній сфері додержання вимог екологічного законодавства всіма учасниками природоохоронної діяльності, здійснення першочергових заходів для стабілізації стану, створення автоматизованої системи оцінки забезпечення екологічної безпеки, як головного чинника щодо стратегічного партнерства в системі колективної безпеки;

в) розмежування обов'язків, повноважень, функцій та відповідальності між центральними, регіональними та місцевими органами влади щодо захисту довкілля та використання природних ресурсів з урахуванням децентралізації влади та залучення бізнесу і громадянського суспільства до природоохоронної діяльності, що сприятиме наближенню національного екологічного законодавства до європейського, як основної умови для встановлення єдиної системи управління екологічною безпекою;

г) моніторинг довкілля громадським суспільством та інформування населення через засоби масової інформації про екологічний стан навколишнього природного середовища на відповідній території, в тому числі про стан об'єктів господарської та іншої діяльності щодо їх екологічної безпеки, забезпечення контролю за органами державної влади, органами місцевого самоврядування, які задіяні в реалізації державної екологічної політики в системі національної безпеки, що сприятиме ефективності екологічного управління для зниження рівня тінізації національної економіки та протидії корупції в природоохоронній сфері.

Реалізація мети і завдань Концепції через розробку відповідної Стратегії та відомчих програм дозволить у перспективі вийти на вирішення дуже важливих проблем у природоохоронній сфері та в забезпеченні раціонального використання природних ресурсів України. Очікуваними результатами від реалізації Концепції управління екологічною безпекою (КУЕБ) є:

– підвищення рівня екологічного нагляду (контролю), управління та відповідальності всіх суб'єктів природоохоронної діяльності;

– приведення чинних українських екологічних нормативів і стандартів у відповідність до європейських;

– розроблення нових екологічних вимог до раціонального використання та відновлення природних ресурсів у нових економічних умовах;

– розмежування повноважень між органами виконавчої влади та уникнення дублювання функцій природоохоронного нагляду(контролю) в екологічній сфері;

– розроблення науково-методологічних основ регулювання та планування техногенно-екологічної безпеки в рамках єдиної державної системи запобігання аваріям, катастрофам та надзвичайним ситуаціям;

– забезпечення належного рівня екологічної безпеки.

Критерії, за якими можна визначити ступінь виконання завдань та досягнення поставленої мети (КУЕБ), визначено:

– поліпшення екологічного стану на всій території країни;

– раціональне використання природних ресурсів;

– перехід України до принципів сталого розвитку;

– збереження біорізноманіття;

– моделювання та прогнозування можливих загроз і ризиків в екологічній сфері;

– активізація участі громадського суспільства у формуванні та реалізації державної екологічної політики;

– міжнародне співробітництво за участю України у вирішенні глобальних питань щодо колективної безпеки.

Обговорення результатів. На основі наукового обґрунтування концептуальних засад державного регулювання забезпечення екологічної безпеки передбачається досягнення стратегічних цілей з урахуванням можливих змін у нормативно-правовому, інституційному та структурно-організаційному забезпеченні. Тому ми пропонуємо впровадити системний підхід щодо функцій управління в реалізації державної екологічної політики як складової національної безпеки України та шляхи його виконання на основі концептуальних положень.

Перше концептуальне положення полягає в тому, щоб органи виконавчої влади та органи місцевого самоврядування мали не тільки бажання, а й можливості для прийняття якісних та ефективних управлінських рішень щодо забезпечення екологічної безпеки:

а) загрози та ризики, які існують у країні та ставлять під загрозу керованість суспільними процесами у сфері захисту довкілля та раціонального використання природних ресурсів актуалізують питання забезпечення всіх складових національної безпеки держави та її регіонів. Тому видається доцільним запропонувати Комітету Верховної Ради з питань національної безпеки, оборони та розвідки включити центральний орган виконавчої влади Державної екологічної інспекції України до складу сектора безпеки та оборони як державного

органу з відповідними функціями і повноваженнями із забезпечення національної безпеки або посилити відповідальність у системі управління природоохоронного нагляду (контролю) шляхом визначення відповідальної посадової особи за екологічну безпеку в керівному складі центрального та територіальних підрозділів Державної екологічної інспекції;

б) при формуванні та реалізації державної екологічної політики щодо гарантування ефективної реалізації концепції слід переглянути систему державного управління в екологічній сфері, де головними суб'єктами центральної виконавчої влади із забезпечення екологічної безпеки є Міністерство захисту довкілля та природних ресурсів України і Державна екологічна інспекція України. Тому доцільно закріпити відповідним нормативно-правовим актом координацію діяльності та підзвітності останньої як органу державної влади з функціями нагляду (контролю) Кабінету Міністрів України в особі Голови Уряду, оскільки до основних повноважень Мінприроди входять функції дозвільно-ліцензійної діяльності;

в) у цивілізованому світі з розвиненою економікою найефективнішим інструментом забезпечення екологічної безпеки є моніторинг довкілля на національному рівні. Існуюча система базується на виконанні розподілених функцій між суб'єктами контролю і складається з підпорядкованих ним підсистем, де кожна підсистема на рівні окремих суб'єктів системи моніторингу має свою структурно-організаційну, науково-методичну та технічну бази та окреме підпорядкування. Тому перспективним видається визначення нормативно-правовим актом Державної екологічної інспекції України головним державним органом у зазначеній системі спостереження за змінами стану навколишнього природного середовища. А для забезпечення інтеграції екологічних рішень у галузеву політику, особливо в тих галузях, де існують найбільші труднощі в процесі обговорення взаємних поступок між екологічною та економічною складовою, актуальним є створення міжвідомчої комісії при Кабінеті Міністрів України з питань забезпечення екологічної безпеки.

г) беручи до уваги тенденцію зростання правопорушень і зловживань у природоохоронній сфері, на часі є затвердження нормативно-правовим документом статусу правоохоронного органу за Державною екологічною інспекцією України, що відповідає вимогам ст. 5 Закону України «Про охорону навколишнього природного середовища» щодо державної охорони довкілля та природно-ресурсного потенціалу України та об'єктів, визначених відповідно до законодавства України [9].

Друге концептуальне положення визначає, що органи державної влади та органи місцевого самоврядування забезпечують механізм реалізації та управління екологічною безпекою з визначенням і систематизацією заходів, пов'язаних з мінімізацією загроз та ризиків у природоохоронній галузі, зокрема:

а) органи державного управління в системі забезпечення національної безпеки, з огляду на проблеми, які існують у природоохоронній сфері, мають посилити свій вплив на прийняття управлінських рішень щодо екологічної безпеки шляхом визначення в Законі України «Про Національну безпеку України» терміна «Стратегія екологічної безпеки та адаптації до зміни клімату» як документа довгострокового планування, що визначає загрози та ризики національній безпеці України, пріоритети і напрями реалізації державної екологічної політики та вимагає комплексного (міжгалузевого) підходу до вирішення наявних проблем у природоохоронній сфері з метою збереження довкілля та раціонального використання природних ресурсів для соціально-економічного розвитку суспільства на основі їх неподільності та взаємозв'язку згідно з Указом Президента № 392/2020 від 14.09.2020 р. «Про рішення Ради національної безпеки і оборони України від 14 вересня 2020 року «Про Стратегію національної безпеки України»» (п. 66 Розділу V: Заключні положення) [3];

б) для забезпечення дієвого контролю за практичною реалізацію концепції існує потреба в механізмі аналізу за діяльністю природоохоронних органів. Тому доречним видається внесення змін у структуру апарату Ради національної безпеки і оборони України щодо відновлення служби з питань екологічної безпеки, що повністю відповідає вимогам пунктів 1, 18 ст. 106 Конституції України [8] та п. 4 ст. 3 Закону України «Про національну безпеку України» [10];

в) з метою залучення громадянського суспільства до нагляду за дотриманням природоохоронного законодавства в Україні, попередження корупції і тіньової економіки у сфері захисту довкілля та використання природних ресурсів необхідно запровадити

загальнодержавну інформаційно-аналітичну систему «Відкрите довкілля», схвалену Урядом 07.11.2018 р. [11];

г) важливим чинником у системі захисту довкілля та раціонального використання природних ресурсів у розвинених країнах (США, Велика Британія, Канада) є активізація позовної роботи природоохоронних органів та виявлення винних в екологічних злочинах, які нанесли або несуть загрозу національній безпеці держави. Але, на жаль, в Україні органи природоохоронного інспектування не наділені правом здійснювати оперативно-розшукову діяльність та встановлювати винних в екологічних правопорушеннях. Тому для забезпечення колективної безпеки доцільним буде введення в дію норм Закону України «Про екологічну безпеку» та нормативно-правових і методичних документів підзаконного характеру.

Третє концептуальне положення визначає, що всі учасники природоохоронної діяльності повинні мати чіткі й зрозумілі права та обов'язки із забезпечення екологічної безпеки як на національному, так і регіональному та місцевому рівні щодо своїх повноважень:

а) з огляду на системні правопорушення в природоохоронній сфері нагальним є прийняття Закону України «Про державний екологічний контроль» та розробка методологічних документів, інструкцій, керівництв для трактування, включаючи урядові рішення, що дозволить чітко розподілити відповідні повноваження на всіх рівнях державної влади та органів місцевого самоврядування із забезпечення екологічної безпеки;

б) враховуючи останні зміни в реформуванні територіального устрою України (Постанова Верховної Ради України «Про утворення та ліквідацію районів» від 17.07.2020 р. № 807-IX) [12], де визначено, що межі районів встановлюються по зовнішній межі територій сільських, селищних, міських територіальних громад, які входять до складу відповідного району, їх територія та чисельність населення збільшились у декілька разів, доцільним буде закріплення нормативно-правовим документом відповідальної особи (або структурного відділу) за охорону навколишнього природного середовища у складі адміністративно-територіальної одиниці з повноваженнями, які б надавали право спільно з працівниками Держекоінспекції, інших державних органів брати участь у проведенні перевірок щодо додержання підприємствами, установами, організаціями всіх форм власності та громадянами вимог природоохоронного законодавства, норм екологічної безпеки, охорони, раціонального використання та відтворення природних ресурсів;

в) реформування місцевого самоврядування та територіальної організації в Україні зумовлюють нагальну потребу в перегляді та визначенні чіткого механізму забезпечення екологічної безпеки на місцевому рівні. Керуючись п. 6 ст. 2 Закону України «Про добровільне об'єднання територіальних громад» [13], де головним принципом є прозорість і відкритість, пропонуємо створити інститут «громадських екологічних інспекторів», які б мали право проводити у випадках, установлених законом, фотографування, звукозапис, кіно- і відеозйомку як допоміжний засіб для попередження і розкриття порушень законодавства в галузі охорони навколишнього природного середовища, раціонального використання і відтворення природних ресурсів та обирались місцевою ОТГ з погодженням профільного комітету обласної ради;

г) фундаментальною основою державної політики щодо децентралізації влади є передача повноважень, яка передбачає запровадження публічного адміністрування на рівні адміністративно-територіальних утворень та об'єднаних територіальних громад. Це зумовлює необхідність переглянути систему функціонування дозвільно-ліцензійної діяльності із забезпечення екологічної безпеки в частині правових та організаційних засад господарської діяльності. Крім того, це стосується екологізації функцій системи загального управління підприємствами із запровадженням міжнародних стандартів системи екологічного менеджменту, екологічного аудиту, а також досвіду екологічного інжинірингу, маркетингу, лізингу та оновлення виробничих процесів (технологічних систем) для поліпшення екологічних характеристик виробництва, модернізацію очисних споруд з економічним ефектом, екологічне оздоровлення прилеглої території, підвищення екологічної свідомості, кваліфікації персоналу, що є обов'язковою умовою поліпшення довкілля та здоров'я громадян.

Четверте концептуальне положення визначає, що система забезпечення екологічної безпеки суспільства, держави, людини передбачає своєчасне виявлення, запобігання і нейтралізацію реальних і потенційних загроз та ризиків національним інтересам державі, суспільству, громадянам, зокрема:

а) ефективне державне управління екологічною безпекою потребує врахування закономірностей та особливостей системи національної безпеки як системи, що формується з урахуванням багатьох чинників внутрішнього й зовнішнього спрямування. Запровадження системного аналізу потенційних загроз і ризиків стратегічним об'єктам оборонно-промислового комплексу та об'єктам з надприбутком, які пов'язані із значними витратами природних ресурсів, об'єктам, ідентифікованим як потенційно небезпечні або об'єкти підвищеної небезпеки та такі, що потребують особливого нагляду і контролю з боку держави у сфері екологічної безпеки, пропонується закріпити за Департаментом національної безпеки та оборони й Офісом Президента, що відповідає вимогам ст. 13 Закону України «Про національну безпеку України» [10]. Керівництво у сферах національної безпеки і оборони, відповідно до Конституції України, здійснює Президент України;

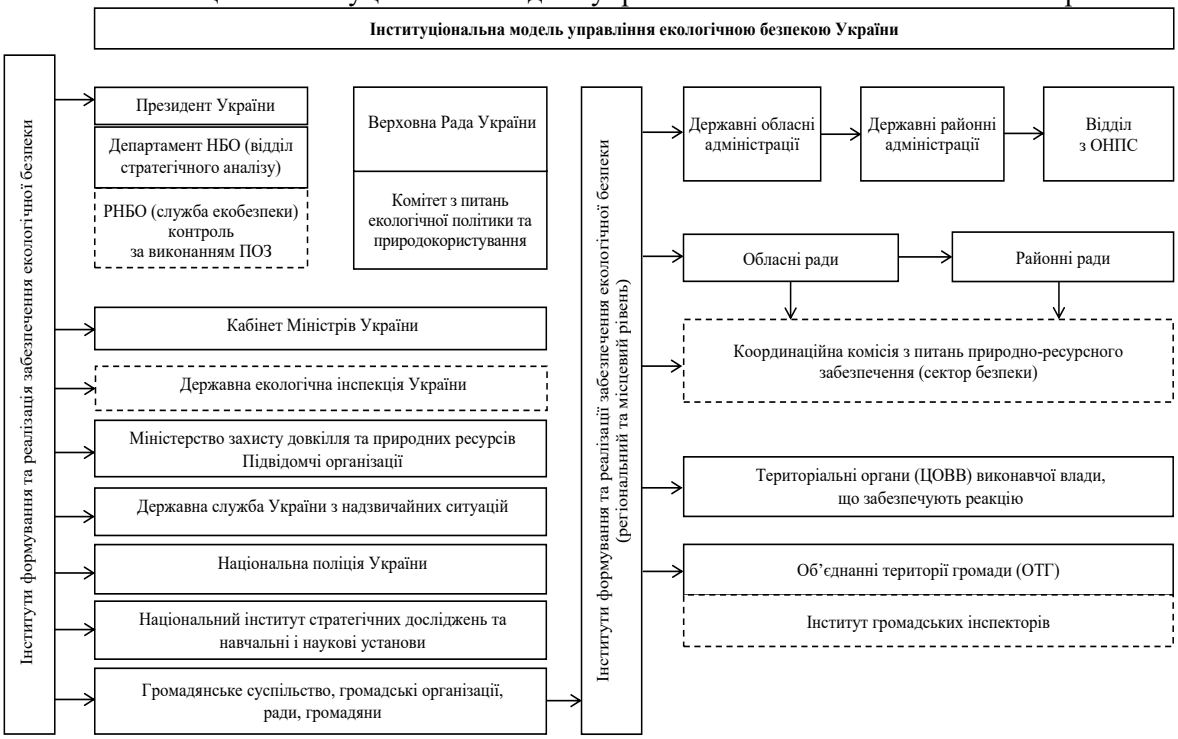
б) інтеграція України в європростір вимагає активної участі нашої держави в заходах із попередження та відвернення наслідків екологічних загроз регіональній безпеці, у зв'язку з чим важливим завданням державної регіональної політики у сфері захисту населення та господарських об'єктів від природно-техногенних загроз є забезпечення гарантованого рівня безпеки. Згідно зі ст. 14 Закону України «Про Раду національної безпеки і оборони» [14] для опрацювання й комплексного вирішення проблем міжгалузевого характеру, забезпечення науково-аналітичного та прогнозного супроводження діяльності Ради національної безпеки і оборони України, за її рішенням у рамках коштів, передбачених Державним бюджетом України, можуть утворюватися міжвідомчі комісії, робочі та консультативні органи. Тому видається, що створення міжвідомчої координаційної комісії (сектор безпеки) з питань природно-техногенних загроз та ризиків і природно-ресурсного забезпечення за участю представників громадянського суспільства при обласних радах нададуть можливість комплексного вирішення проблем у сфері захисту довкілля та природних ресурсів;

в) відповідно до Постанови Кабінету Міністрів України від 13.09.2002 р. № 1371 «Про порядок участі центральних органів виконавчої влади у діяльності міжнародних організацій, членом яких є Україна» [15] видається необхідним включити до робочої групи зі стабілізації ситуації на Сході України представників Мінприроди та Державної екологічної інспекції, які займатимуться питаннями екологічної безпеки державних установ, що розташовані на території, де органи влади тимчасово не здійснюють свої повноваження;

г) пріоритетом державної екологічної політики в забезпеченні екологічної безпеки має стати посилення міжнародного співробітництва із запровадження європейського досвіду класифікації сучасних діючих економічних інструментів, мета яких – забезпечення адекватного відшкодування втрат, нанесених у результаті небезпечної господарської та іншої діяльності навколишньому середовищу, за принципом «забруднювач платить», а саме: реформування методики щодо нарахування штрафу відповідно до його економічної суті як запобіжного інструмента у разі нераціонального використання природних ресурсів, де також будуть враховані витрати на запобігання та профілактику наслідків діяльності, які можуть бути визначені як потенційно небезпечні, та запровадження міжнародної практики застосування екологічного страхування за прикладом країн, де цей вид діяльності економічно мотивований.

Сучасним інструментом у досягненні позитивних рішень з питань захисту довкілля та раціонального використання, збереження й відтворення природних ресурсів виступає активна частина громадянського суспільства. Тому для вирішення проблем як зовнішнього, так і внутрішнього характеру в екологічній сфері пропонуємо об'єднати зусилля представників громадських організацій, науково-експертного середовища та бізнесу в одну національну громадську раду з питань забезпечення екологічної безпеки для обговорення й надання пропозицій органам державної влади на всіх рівнях (таблиця).

Таблиця 1. Інституціональна модель управління екологічною безпекою України



У сучасних економічних умовах основним питанням залишаються проблеми, пов'язані з фінансуванням природоохоронних заходів, спрямованих на забезпечення екологічної безпеки. Для реалізації основних положень Концепції управління екологічною безпекою пропонуємо в природоохоронному, електроенергетичному, ядерно-енергетичному, вугільно-промисловому та торфодобувному комплексах Мінприроди запровадити державну програму «Безпечне довкілля» та підготувати пропозиції Кабінету Міністрів України щодо впровадження механізму інвестування спільних державних екологічних проектів з бізнесом та міжнародними природоохоронними організаціями, які спрямовуватимуться на розв'язання питань, пов'язаних із глобальними й локальними проблемами на всіх рівнях в екологічній сфері.

Враховуючи, що однією із стратегічних цілей державної екологічної політики є забезпечення екологічно збалансованого природокористування, що визначено в Законі України «Про Основні засади (стратегію) державної екологічної політики України на період до 2030 року» [16], та її матеріальне заохочення, яке ґрунтується на екологізації виробничої діяльності шляхом залучення пільгових позик та пільгового кредиту на розвиток ресурсозберігаючих технологій і стимулювання суб'єктів господарювання як державних, так і приватних щодо екологічної спрямованості розвитку виробництва. Але, на жаль, вони сьогодні постійно стикаються з економічними обмеженнями або, за наявності економічних ресурсів, з пріоритетністю їх вкладень не на користь екологічних пріоритетів. Тому ми пропонуємо розробку та прийняття нормативно-правового документа щодо підтримки всіма гілками влади пріоритетності завдання з реалізації природоохоронних заходів шляхом отримання пільгових позик та кредитів для впровадження еколого-орієнтованих методів господарювання та контролю з боку держави за їх використанням.

Висновки. Проаналізувавши основні теоретичні концепції, що визначають напрямок і розвиток взаємовідносин природоохоронної діяльності та системи національної безпеки, можемо визначити концептуальні засади регулювання формування та збереження екологічно безпечного середовища як одного з чинників соціальної стабільності та економічного розвитку України:

– оновлення нормативно-правового, інституційного, структурно-організаційного та фінансового забезпечення й запровадження сучасних механізмів екологічного управління на засадах захисту національних інтересів у сфері захисту довкілля та природокористування шляхом створення органів управління та контролю з окремих питань, що стосуються забезпечення екологічної безпеки на всіх рівнях;

– розвиток та становлення інституту громадянського суспільства як головного суб'єкта управління в галузі природокористування;

– впровадження концепції соціального партнерства органів державної влади, органів місцевого самоврядування, територіальних громад та суб'єктів господарювання з метою забезпечення повноцінного життєвого середовища для громадян;

– ініціювання суб'єктами формування державної екологічної політики при залученні наукової, освітньої, експертної, управлінської, політичної та громадської спільноти до процесу адаптації українського природоохоронного законодавства до законодавства Європейського Союзу, що надасть можливість забезпечити розвиток усіх сфер суспільного життя країни.

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DEVELOPMENT OF THE DIGITAL ECONOMY IN THE REPUBLIC OF UZBEKISTAN

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ABSTRACT

The article shows the main aspects of the formation and development of the digital economy in the Republic of Uzbekistan. Such concepts as digital economy, digitalization, digital technologies are considered. The promising directions of development of the national economy in the field of ICT are investigated, the urgent tasks of digital development in the republic are considered. The main achievements in the implementation and use of information technologies in public administration and various sectors of the economy are presented.

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Introduction. Currently, the level of development of digital technologies used in all economic, state and other spheres of the state determines not only its economic and social development, but also greatly increases the country's competitiveness in the world arena. The next stage of transformation of business and social models is unfolding, caused by the emergence of new generation digital technologies, which, due to the scale and depth of influence, are called "end-to-end" - artificial intelligence, robotics, the Internet of things, wireless technologies and a number of others.

Main part. In the Address to the Oliy Majlis of the President of the Republic of Uzbekistan Shavkat Mirziyoyev on January 24, 2020, important tasks were noted, such as “Completion and implementation in two months of the development of the“ Digital Uzbekistan - 2030 ”program, which provides for the renewal of all sectors of the economy based on digital technologies, an increase in the share the digital economy in GDP by at least 30%, thereby reducing corruption, a radical change in the digital economy this year, the implementation of the "1 million programmers" project with our foreign partners in order to further accelerate work on the development of science and the digital economy and the training of highly qualified specialists in this area. "

Let us consider in more detail the very concept of the digital economy and digitalization. The term "digital economy" is used to describe markets that focus on digital technologies and reflect the transition from the third industrial revolution to Industry 4.0, that is, the replacement of analog electronic and mechanical devices at the end of the 20th century to digital [6]. There is a wide variety of interpretations of the "digital economy".

So, in the fundamental work of R. Bucht, R. Hicks, over two dozen meanings of the term are given and some uncertainty of their boundaries is noted [6]. The concept of “digital economy” was introduced into circulation by N. Negroponte in 1995 as a metaphor for a new information culture, the

organic part of which was digital content (music, films, paintings, games, etc.), which was initially defined as “computerization ".

The economy of the new order is a product of the development of the information society. Over the past 30 years, it has gone through three stages:

- 1990s - the emergence and development of the Internet, with which connect qualitative shifts in production and management, which have become the basis of the digital economy;

- early 2000s - when the digital economy was viewed as an Internet-based business activity (e-commerce, including trade in digital content);

- 2010s - the digital economy began to be considered in conjunction with the development of ICT and the introduction of digital sensors (Internet of Things), which created the preconditions for changes in business processes and the economic system of enterprises.

Thus, we can say that the accelerated introduction of digital technologies in the economy and social sphere is an ambitious goal that is being successfully implemented only in a very few leading countries. It is achievable only if a number of essential conditions are met.

Firstly, business and the social sphere must be ready for digital transformation, development strategies must mature and take shape, implying a radical change in the ways of organizing and conducting business through the planned intensive introduction of digital technologies, which are in demand by organizations and promising stakeholders a return on investing their own funds.

Secondly, a relatively mature sector of technological supply should emerge in the country, which, if it does not claim to be an international leader, is at least capable of a quick transfer and adaptation of foreign technological solutions and a rapid increase in the scale of its own activities.

Thirdly, the population's demand for digital technologies should constantly grow, since it is the needs and capabilities of consumers that ultimately determine the adequate demand for digital technologies from organizations, primarily in the B2C field [6].

According to experts from the World Economic Forum, the potential of digital transformations (and as a consequence of the massive use of digital technologies to reduce various costs, and as a means of optimizing processes in the economy, society, and as a result of the emergence of new industries) is estimated at over 100 trillion dollars [7]. Many countries have identified digital development strategies as high priority and are implementing a set of measures to digitize the economy and society.

Returning to the term "digital economy", it should be noted that the directions, forms and types of activities associated with the use of ICT, digital technologies and the analysis of big data are developing so rapidly that even definitions cannot keep up with them. In this regard, both the clarification of the conceptual apparatus of digitalization and the assessment of its current state and prospects are relevant, which requires appropriate theoretical substantiation of this phenomenon. It should be pointed out to its two main aspects: digitalization and the digital economy.

The first is a long, complex and multidimensional process of transferring production and management technologies and information resources into a state suitable for the effective use of digital devices and technologies and involves the achievement of the following goals [6]:

- cheaper and more reliable collection, systematization, transmission and analysis of data (due to discrete sensors - the Internet of things, RFID tags, etc.);

- cost reduction and simplification of communications in the economy and society (digitalization of content and communication channels);

- creation of a system for multi-interaction of people and business processes vertically and horizontally (inter-organizational digital systems).

It should be noted that the reform processes carried out in the Republic of Uzbekistan in recent years are accompanied by the active introduction of modern information and communication technologies, the availability of telecommunications services for the population is increasing, various types of public services are also gradually transferred to electronic form, more and more often this type of service is provided on the principle of "one window ". We also note that the position of Uzbekistan in the UN rating on the development of electronic government is consistently strengthening.

In order to accelerate the development of digital technologies, improve the efficiency of public administration, improve the quality of the provision of public services, create a favorable environment for the development of innovative technologies, and, ultimately, increase the country's competitiveness, such documents were adopted as the Resolution of the President of the Republic of Uzbekistan “On Approval of the Concept of the National strategy "Digital Uzbekistan 2030" (Id-10574 PROJECT),

Decree of the President of the Republic of Uzbekistan dated February 19, 2018 "On measures to further improve the field of information technology and communications"; Decree of the President of the Republic of Uzbekistan No. PD(President Decree)-5598 dated December 13, 2018 "On additional measures to introduce the digital economy, electronic government and information systems in the state administration of the Republic of Uzbekistan"; in the Action Strategy for five priority areas of development of the Republic of Uzbekistan for 2017-2021, issues of wide and effective implementation of the digital economy and ensuring information security in the country are identified as priority tasks on the basis of the decree of the President of the Republic of Uzbekistan dated July 3, 2018 "On measures to develop digital economy in the Republic of Uzbekistan ", as well as other regulatory legal acts.

The main tasks of digital development of the Republic of Uzbekistan are the following [1]:

- ensuring a systematic and consistent process of development of the digital economy, e-government, information, communication and innovative technologies;

- increasing digital literacy of the population and training highly qualified personnel in the field of digital technologies, creating favorable conditions for retraining personnel, popularizing remote work methods;

expansion of telecommunication infrastructure and data processing centers, formation of the necessary infrastructure to provide the scientific community and implement innovative projects;

- improving the legal regulation of the digital economy, creating "regulatory sandboxes" for conducting legal experiments related to the regulation of relations when introducing new technologies;

- increasing the efficiency of collecting and processing data, creating new economic values by efficiently utilizing data, increasing the availability of data for the population and business entities;

- introduction of modern forms of financing for IT projects and companies (venture financing, crowdfunding, IPO, asset tokenization), increasing the transparency and accessibility of government orders in the field of information technology, creating venture funds and technology parks, attracting foreign investment and stimulating the development of export-oriented products, support in the monetization of digital products and services;

- expansion of international cooperation in the field of digital development, active study and implementation of foreign experience, establishment of cooperation with large foreign companies for the implementation of joint projects.

Consider the current state of digitalization in our republic, as well as the prerequisites for its further development.

In recent years, the Republic of Uzbekistan has made significant progress in the implementation and use of information technologies in public administration and various sectors of the economy, including [1]:

- provision of public services in electronic form and through the extensive infrastructure of public service centers;

- formation of a system of interdepartmental electronic interaction;

- creation of basic state information systems and resources;

- regulation of relations in the field of personal data;

- widespread use of electronic means of payment;

- the use of information technology in the real sector of the economy;

- the beginning of the implementation of the projects "Smart City" and "Safe City".

More than 25.6 thousand of km of fiber-optic communication lines have been laid. More than 67 percent (22.5 million users) of the country's population have access to the World Information Network Internet (hereinafter referred to as the Internet), while the number of third and fourth generation mobile users has exceeded more than 16 million subscribers.

At the same time, the share of expenditures on support and development of the information and communication technologies (hereinafter - ICT) sphere of total government expenditures in 2019 amounted to only about 1.5 percent (USD 7.8 million), which is a low indicator. for effective digitalization of the republic both in the short and long term. A similar minimum indicator for developed leading countries (Great Britain, Finland, Denmark, Netherlands, Sweden, USA, France, Norway, Japan) in this direction is more than 12 percent of all government spending.

Exports of services in the field of telecommunications and information technologies in 2018 amounted to $ 154.5 million (5.1 percent of the total export of services), and imports - $ 47.1 million (2.1 percent of the total volume of imports). services).

The share of ICT specialists among the employed population in 2019 was 0.5 percent, which is almost 7 times less than, for example, the average for the EU countries (3.7 percent). At the same time, the demand for ICT specialists in the country is rapidly increasing, and therefore, the shortage of personnel in this area can lead to negative consequences for both the private sector and effective government. The rapidly growing demand for qualified specialists, as well as their shortage, lead to an increase in the level of salaries for specialists in the ICT field, which undoubtedly exacerbates the problem of providing qualified specialists for government bodies.

Conclusions. Thus, the analysis of the existing situation in the field of the formation and development of digital technologies and digitalization processes of the national economy, as well as the main trends in their development, allowed us to determine that the digital economy is formed on the basis of digitalization and has its own specifics, determined by the nature of creating added value by increasing and systematization of digital content (subject of labor), the growth of intellectualization of algorithms for its processing automatically (without human intervention) and depending on signals from the external environment.

We also note that one of the key characteristics of the digital economy is the rate of change in the production of goods and services, in the applied business models and management. The digitalization of the economy will also contribute to the formation of digital ecosystems, as a consequence of the ever-increasing complexity of the economy, as well as the growth of information activities to ensure the interaction of all links in the production of goods and services and the increasing consideration of individual consumer needs.

And the further formation of the electronic segment of the economy can be characterized as a transition to smart management - a qualitatively new stage when digital technologies will be considered as labor-saving, reducing trade, transport and time costs, forming a new entrepreneurial culture and an active "biological species" - digital ecosystems that allow implementing automatic personalization of the buyer and individualization of orders, optimization of production and supply chains.

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THE IMPACT OF DUBAI'S WORLD GREEN ECONOMY SUMMIT ON CHINA'S NEW THINKING OF GREEN ECONOMY

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ABSTRACT

As the global epidemic continues to have an impact on the world economy and public health, the issue of climate change is still the core threat facing the world. The "2020 Global Risk Report" issued by the World Economic Forum (WEF) pointed out that the five major risks facing the world in the next 10 years are all related to the environment. A study on this pointed out: If governments adopt greener economic recovery plans, the world can reduce the temperature rise by 0.3°C by the middle of this century. In other words, accelerating green economic growth after the epidemic and promoting green transformation in all aspects have become the top issues facing countries. Some of the economic recovery plans proposed by Western Europe, South Korea, Canada and other countries may have a positive effect on the environment. Economic stimulus plans such as China, the United States, Australia, Italy, and Japan will invest most of the funds in non-green areas. Among them, the US economic stimulus plan may the negative environmental impact is the greatest. The Dubai's World Green Economy Summit held this year undoubtedly produced a revolutionary change in thinking for the largest developing country like China.

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Introduction. The concept of "green economy" first appeared in the late 1980s. Environmental economists believe that economic development must be sustainable by the natural environment and human beings, without blindly pursuing production growth and causing social divisions and ecological crises, nor by depletion of natural resources and making the economy unsustainable. The essence of green economy is a sustainable economy with the coordinated development of ecology and economy as the core. It is an economic development model characterized by maintaining the human living environment, reasonably protecting resources and energy, and benefiting human health. It is a balanced economy. Under this economic model, many environmentally-friendly technologies such as environmental protection technology and clean production technology are transformed into productivity, achieving sustainable economic growth, and ultimately eliminating poverty. Therefore, the green economy is particularly important in the 21st century.

Dubai's World Green Economy Summit.

Dubai, May 30, 2021, World Green Economy Summit (WGES), organized by the Dubai Water and Power Authority (DWPA) and the World Green Economy Organization (WGEO) with the Dubai Supreme Council for Energy (DSCE) and the United Nations Development Programme (UNDP) Cooperatively held under the patronage of His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President, Prime Minister and Ruler of Dubai. WGES is an important global platform that strengthens partnerships among key decision makers, as well as cooperation between regional and international organizations in the public and private sectors to achieve the transition to a green

economy. The Global Environment Working Group is a strategic platform that supports international cooperation in addressing global challenges, promoting sustainable development, and investing in a green economy. Since its establishment in 2014, the summit has made great progress and many achievements, especially due to the increased cooperation between public and private sector decision makers. The working group publishes the "Dubai Declaration" every year, which includes the recommendations of the participants, the conclusions of the summit, and the milestones and activities of the conference. The 7th WGES will be held on October 6th and 7th, 2021 at Expo 2020 in Dubai. The theme is "Connecting Thoughts and Creating the Future". As it will be held concurrently with the Dubai Expo 2020, it is expected that the scale of the WGES will be even larger. This enhanced the summit's success in consolidating Dubai's status as the global green economy capital. The goals of the Global Environment Outlook Working Group are in line with His Highness Sheikh Mohammed bin Rashid Maktoum's instructions on balancing economic growth and environmental sustainability. The summit also supported the UAE's efforts to achieve the UN Sustainable Development Goals in 2030 The efforts made by the "2030 UAE Green Agenda" and "Dubai Energy Strategy 2050". In the UAE, some key initiatives have accelerated the pace of the green economy. The UAE has launched several important initiatives to accelerate the engine of green economy transformation. Transformation projects such as the construction of solar power plants, the use of environmentally friendly electric vehicles, and the construction of sustainable, low-carbon urban communities support wise leadership strategies to achieve a sustainable future in the UAE's important sectors. Dubai has made great strides on the road to sustainable development. It has initiated some pioneering projects in renewable and clean energy, including the Mohammed bin Rashid Al-Maktoum Solar Park, which is the world's largest single-site solar park based on the independent power producer (IPP) model. It is estimated that by 2030, the UAE's power generation capacity will reach 5,000 megawatts, which will enhance the leadership of the UAE and Dubai as successful models of global sustainable development. The 6th World Green Economy Summit in 2019 focuses on three pillars: sustainable development, international cooperation in the green economy system, and innovative green solutions. Presidents, global leaders and influencers attended the summit. The conference attracted about 4,000 participants, experts and opinion leaders in various fields of green economy and sustainable development, including executives, partners, financial institutions and global market representatives from 78 countries. 60 speakers took the lead in holding 14 seminars and seminars. The focus of this summit is to align energy policy with the United Nations Sustainable Development Goals, highlighting the huge amount of work required to build a sustainable future. Participants exchanged views on successful sustainability strategies, systems and policies and their potential for replication and expansion. It also focuses on the role of women in achieving a green economy through innovation, cooperation, transparency, environmental management, and social solidarity. These are soft skills that are particularly important in terms of environmental sustainability and development. This version of the summit explored the challenges and opportunities women face in terms of sustainability, highlighting various women working in this field in sectors such as energy, water, finance, and development. In addition, the summit discussed the sustainability of the private sector, green banking and investment, and the challenges and solutions of the green economy and sustainable agriculture. This also proves the country's ability to support the transition to a green economy. Through fruitful meetings, environmentalists, technicians and business leaders from all over the world gather to discuss how the public and private sectors can optimize innovation and accelerate the transition to a green economy. At the summit, the Dubai Sustainable Finance Working Group was established, which coordinated the key initiatives of the local financial sector in terms of local and regional market environments. The meeting also emphasized the importance of international cooperation in responding to global challenges and promoting global sustainable development. The establishment of the Middle East and North Africa Regional Cooperation Center and the hosting of regional ministerial meetings by the Earth Observation Working Group to strengthen cooperation among countries around the world have all proved the global effort towards a sustainable future. During the 2019 Dubai Declaration, Taye announced that after the signing of the Memorandum of Understanding (MoU), the Dubai Ministry of Energy and the World Earth Observation Organization will jointly lead the establishment of the United Nations Global Compact local network. The Fifth World Climate Conference brought together more than 3,700 global experts, experts and opinion leaders to discuss key issues such as climate change and global warming. This summit is particularly important because it opened the way for the adoption and

signing of an agreement to establish an Earth Observation Working Group. The summit focused on three pillars, including green capital, digital transformation, leadership and social participation. The meeting also discussed the latest smart technologies and digital innovations that accelerate the transition to a green economy and sustainable development. This ensures the transition to a green economy. The summit passed legislation and regulations to encourage investment opportunities in energy, water and infrastructure projects, and improve the quality of their services, and determined the ideal public-private partnership model and mechanism. Participants emphasized the need for effective leadership in the public and private sectors to accelerate the transition to a green economy. This can be achieved by adopting incremental policies and incentives, influencing individual behavior and consumption patterns, or increasing environmental awareness. They also agreed that sustainable development must be inclusive because it requires the full commitment of leaders in the public and private sectors. During the summit, Dubai also launched an electric car community publicity campaign called E-Sayyara, which was the first such event in the region. E-Sayyara supports the "2030 Dubai Green Transport Strategy". The summit also released the "World Green Economy Report 2018" in cooperation with the University of Cambridge and the United Nations Development Program, which "inspires business, financial and policy innovation." The meeting emphasized that we need to adopt more in-depth and diversified approaches to build a truly green economy and advance the global sustainable development agenda. In addition, the summit also announced that it will be committed to the "Green Door" initiative to cover all green plans that will simplify the process of sustainable development. The first preparatory meeting was held at the fifth summit meeting, and well-known representatives from at least 60 countries attended the meeting. It established the iconic working group as a completely independent international organization. The World Green Economy Organization and the UAE Ministry of Climate Change and Environment (MOCCAE) will cooperate with the United Nations Development Program (UNDP), the United Nations Environment Programme (UNEP), the United Nations Climate Change, and the United Nations Framework Convention on Climate Change (UNFCCC) to host the "Middle East and North Africa" Climate Week 2022", and the World Bank Group. The UAE will host such events in the Middle East and North Africa for the first time during the 2020 World Expo in Dubai from March 2nd to 3rd, 2022. This event will highlight the urgency of addressing climate change and current global development challenges. The Middle East and North Africa Climate Week will convene leaders from the government, the private sector and civil society to discuss the serious threat of climate change and cooperate to take rapid and bold actions to address this challenge. This event provided plenty of opportunities for cooperation and demonstrated groundbreaking technologies that can help the region adapt to climate change. Stakeholders have a unique opportunity to reflect and modify their national climate action plans to effectively respond to social, environmental and economic impacts. Participants will also be able to follow up on discussions raised during the 26th Climate Change Conference (COP26) in Glasgow, UK in November 2021. The Global Environment Outlook Working Group attaches great importance to youth and strives to strengthen the role of young entrepreneurs to confirm their ability to find innovative and sustainable solutions, promote green growth, and achieve sustainable development locally and globally. The summit regularly organizes youth circles to participate in sustainable development and green economy before entering the job market. Important figures, officials, experts, speakers, experts, local and global investors participate in the youth circle and encourage them to strive for sustainable development [1].

It can be seen from this that the Dubai's Green Economy Summit, held when COVID-19 affects the world, will provide development impetus for the development of the green economy in the post-epidemic era.

China's green economy development.

The relationship between the environment and economic growth has always been an important content of scholars' research. From the current research literature, most scholars believe that economic growth and energy conservation and emission reduction can achieve a win-win situation, thus providing a theoretical basis for green development. Research by Zhang Ningchuan believes that there is a long-term and short-term difference in the impact of environmental regulations on economic growth. In the short term, environmental regulations can reduce pollution and help improve the environment, but at the same time, they are not conducive to technological progress and total factor productivity. However, in the long run, the adverse effects of environmental regulations on economic development will gradually be offset by other economic and social effects of environmental

regulations. Economic growth will begin to improve, eventually achieving coordinated and synchronized development of the economy and environmental protection, and achieving a win-win situation for both. This kind of "win-win", on the one hand, is subject to the structural arrangement of the endogenous system, on the other hand, it is subject to the market.

The impact of external institutional environment such as globalization, government quality, etc. Environmental regulations play an important role in promoting economic development, and a reasonable institutional environment will maximize the effectiveness of environmental regulations [2, p.126-143]. Liu Jianping used the panel data of my country's industrial industry from 1985 to 2012, combined with the recent emerging time to replace the DEA model, and found that because the environmental technology efficiency of my country's industrial industries is generally low, energy conservation and emission reduction may have a potential negative impact on economic development , Relying on the improvement of environmental technology efficiency can effectively control this phenomenon, most of the process industries have the "Environmental Porter Hypothesis" in the "Environmental Porter Hypothesis" of economic development and energy saving and emission reduction may be a win-win situation [3, p.166-192]. Chen Lu found that the economic and environmental levels of China's urban agglomerations have a large gap based on the linkage effects of economic growth and environmental protection in China's 20 major urban agglomerations, resulting in the matching of economic growth and environmental protection in different types of urban agglomerations. The relationship is different. Urban agglomerations with a high level of economic development and good environmental carrying capacity have gradually reached a new stage of mutual promotion and organic integration of economic growth and environmental governance. Urban agglomerations with insufficient carrying capacity will excessively pursue economic growth and lead to aggravation of environmental problems [4, p.70-81].

Adhering to the concept of green development, scholars have put forward policy recommendations from different perspectives on the choice of green development paths.

Lu Zhiqiang used the 1992-2010 input-output table to decompose the changes in carbon emissions into five effects, namely energy structure, energy intensity, value added, Leontief inverse matrix, and final demand effect to study carbon dioxide emissions. The relationship with changes in economic structure. They found that the current basic industries in my country are basically high-energy-consuming industries. For this reason, gradually reducing the proportion of the secondary industry is the focus of future energy conservation and emission reduction. At the same time, they put forward different energy-saving and emission-reduction policies for different sectors: for coal mining and washing industries, it is necessary to maintain a certain proportion, and formulate energy-saving policies from the perspective of technological progress; for general-purpose special equipment manufacturing, try to improve the use of energy. Efficiency; for non-metallic mineral systems

The product industry should reduce its proportion as much as possible without affecting production and life; for food manufacturing, tobacco processing industry, public management and other sectors, we should focus on expanding its proportion [5, p.37-45].

Zhang Xiao and others pointed out that the spillover effect of pollution, especially haze areas, is obvious. To achieve better governance results, it is necessary to strengthen joint prevention and control between regions. Taking the east as an example, traffic congestion and the impact of pollution in neighboring areas are important reasons for its high pollution. Therefore, for the east, breaking the provincial administrative boundaries and realizing joint prevention and control at the municipal level is a more effective governance method [6, p.147-160].

Fan Qingquan and others believe that the employment dividend of the current policy will gradually disappear as my country's carbon intensity reduction tasks continue to increase. At the same time, the problem of misallocation of resources accumulated in policies and imbalance of marginal abatement costs among industries has become more and more serious. Therefore, the time to implement carbon trading emission reduction policies is gradually ripe, and the government should promptly introduce carbon trading policies to gradually replace the current emission reduction policies [7, p.168-192].

Liu Xiuyan pointed out that in terms of urban internal planning, controlling the disorderly spread of cities, especially small cities, and urban construction based on a compact spatial structure have a good effect on preventing and controlling smog. In terms of urban system optimization, it is necessary to appropriately control the scale of large cities, steadily develop small and medium-sized cities, and form a new situation of coordinated development of large, medium and small cities [8,

p.146-160]. Ma Limei and others regard the formulation of mid- and long-term layout plans that are in line with urban development as an important measure for green development.

Zhou Hongchun believes that the sharing economy, with Uber and OFO as the emerging representatives, meets the requirements of resource conservation and environmental protection, conforms to the concept of green development, and is a good embodiment of green consumption. Advocating and developing the sharing economy is conducive to establishing a green consumption concept in the whole society, promoting people's green production and lifestyle, and further accelerating the construction of a resource-saving and environment-friendly society, which is important for entering a new era of ecological civilization as soon as possible [9, p.56-57].

Duan Lida and others believe that in my country's current environmental management, the problems of irrationality and lack of key protection content in the protection form and regulation adjustments are a very negative form of protection. Various reasons have led to the emergence of this form of protection, which greatly restricts the effect of environmental management. Deeply reflect on the current problems in environmental management, actively promote reforms, rationalize environmental benefits, optimize management and protection mechanisms, and optimize environmental management methods to truly achieve the effects of environmental management [10, p.176-177].

It can be seen that China's green economic development will affect China's sustainable development strategy. As Xi Jinping said: "Adhering to green development is a profound revolution in the outlook on development. It is necessary to transform the economic development mode and comprehensively control environmental pollution. Natural ecological protection and restoration, resource conservation and intensive utilization, perfecting the ecological civilization system and other aspects to take extraordinary measures to carry out ecological environmental protection in all directions, all regions, and the entire process"[11].

Conclusions. I believe that the World Green Economy Summit in Dubai will have a transformative effect on the world's green economy. As China is the largest developing country, while economic development, people's requirements for environmental quality are becoming higher and higher. The development of a green economy will give a new thinking to China's sustainable development strategy, and indirectly promotes the development of China's green environmental protection cause.

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ANALYTICAL TOOLS FOR CONSULTING COMPANY'S DEVELOPMENT STRATEGY FORMATION: SELECTION AND OPTIMIZATION

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ABSTRACT

In this paper the different analytical methods of strategic management were summarized as one analytical stage of the whole strategy formation process. The best practice of managers which was described in different research was reviewed and developed in terms to get more quick and suitable management tools for small and medium sized consulting companies. SWOT-analysis was used to estimate basic quality factors, which influence on the company. EFAS, IFAS, SFAS methods were used and supplemented by adding the reference data for consulting companies. Visualization with using a bubble chart was proposed for EFAS, IFAS, SFAS results interpretation with the possibility of considering company's dynamic changes. The stakeholders' analysis was proposed to use as a part of analytical stage of development strategy formation process for consulting companies. This type of analysis was improved by using the 5-scored scale estimation as a risk-management tool. That would help to build a stakeholders' map for further visualization. As a result, the level of strategy objectiveness will be increased, total spent time will be decreased and the strong analytical background for further strategy formation process will be achieved.

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Introduction. The issue of strategy formation is relevant for different sized companies. All aspects of this process are actual for managers as clear understanding of each formation stage can help to get the successful winning strategy. Thus, on the background of the rapid information technology progress the analysis of information may become a very useful tool to correctly estimate the current company's position and the main future trends of society's development before making any decision of moving forward. The quality and reliability of any strategic decision strongly depend on the quality of inputs. As and the results of the analysis. According to some research [16], analytics can be also a success factor which can increase the value of company's business. Among the main benefits of a well-done analytical job the strategic decision-making process and the knowledge of consumer can be strongly improved, operating costs can be decreased while sales can be grown up.

Material and Methods. The purpose of this paper is to present the results of investigation in the field of strategy management. The analytical stage of consulting companies' strategy formation process was described and developed. Main methods were used such as graphical method, SWOT-analysis, methods of Internal Factors Analysis Summary, External Factors Analysis Summary, Strategic Factor Analysis Summary, deduction and induction.

The problem of chosen the most popular management tool was investigated by different researchers [6; 4; 12].

Results. As the general result of these investigations the two groups of the most widely used tools could be formed: traditional such as different types of matrix analysis and modern such as graphical analysis using modern information technologies tools. SWOT-analysis is the most popular among traditional analysis. But it lacks numbers and quantity characteristics. That makes it suitable for different private companies but increases the subjectivity of the output (Table 1).

Table 1. SWOT-analysis for a small-sized consulting company

Strengths	**Weakness**
Experience in Subject	Small number of permanent customers
Portfolio	Lack of Financial Resources
Licenses	low level of customer payment culture
Membership in profile associations and unions	Small development costs
Reference letters	Small marketing costs
Absence of claims	Small publicity costs
Own working methodologies	Small innovative costs
	Small personnel
Opportunities	**Threats**
Globalization	Worse legislation, additional restrictions appearance
Applying information technologies	New market players appearance
International interaction	Average industry profitability falling
Creation links with Publicity and other stakeholders	Company's technological aging of business processes
Merger & Acquisition participation	

The EFAS (External Factors Analysis Summary), IFAS (Internal Factors Analysis Summary) and SFAS (Strategic Factor Analysis Summary) [5; 10; 13] are seems to solve the problem with quantity characteristics but input information, which could be useful for strategic decision-making, usually is private. One more drawback of SWOT-analysis is the absence of comparison with competitors. This could be improved with M. Porter's analysis and benchmarking but both methods require input quantity data which is also private for the most private small and medium sized companies.

So, using the results of expert survey, which was conducted among the consulting companies [8], the Modified Matrix for Consulting of External Factors Analysis Summary - MMC EFAS, Modified Matrix for Consulting of Internal Factors Analysis Summary - MMC IFAS could be proposed by author in this paper (table 2 and table 3).

Table 2. Modified Matrix for Consulting of External Factors Analysis Summary (MMC EFAS)

№	**External Factors**	**Weight of the Factor, which is measured by the Strategist (a)**	**Expert Weight of the Factor (a_{exp}) [8]**	**Expert Summary Score of the Factor (S_{exp}) [8]**	**Weighted Factor Value (FV = a * S_{exp})**	**Comments**
1	**2**	**3**	**4**	**5**	**6**	**7**
Opportunities						
1	Globalization	10%	0.20	8.00	0.80	indicators for assessing the sustainability of development
2	Applying information technologies	15%	0.28	14.00	2.10	indicators for assessing the sustainability of development
3	International interaction	10%	-0.04	15.00	1.50	indicators for assessing the sustainability of development
4	Creation links with Publicity and other stakeholders	5%	-0.04	5.00	0.25	indicators for assessing the sustainability of development
5	Merger & Acquisition participation	15%	-0.08	7.00	1.05	financial indicators (market value)
Total Opportunities Estimation:					**5.70**	

Continuation of table 2

1	2	3	4	5	6	7
Threats						
1	Worse legislation, additional restrictions appearance	15%	-0.12	-2.00	-0.30	indicators for assessing the sustainability of development
2	New market players appearance	10%	-0.16	-18.00	-1.80	compliance with the goals and objectives of the competitive strategy
3	Average industry profitability falling	15%	0.41	-12.00	-1.80	Financial indicators
4	Company's technological aging of business processes	5%	-0.28	-14.00	-0.70	a factor like the possibilities is accepted with the opposite sign
Total Threats Estimation:					**-4.60**	
MMC EFAS TOTAL SCORE					**1.10**	

(Proposed by the Author)

The "Weight of the Factor, which is measured by the Strategist" should be set directly by the decision-maker considering reference data from the 5th column. It may differ in any thus adding the Strategist's personal estimation. "Expert Weight of the Factor" and "Expert Summary Score of the Factor" are received empirically and should be taken from the research [8]. "Expert Summary Score of the Factor" should be taken as a negative meaning. MMC EFAS total score should be estimated as a sum of total opportunities and threats estimations.

As SWOT-analysis may contain factors which are not listed directly in research [8] the additional table (table 3) can be used or simply comments can be applied at the column 7 of table 2.

Table 3. Additional information for MMC EFAS

Indicator [8]	Group of Indicators [3]	#	External Strategic FACTORS
Research and Innovation costs	indicators for assessing the sustainability of development	1	Globalization
information technologies costs	indicators for assessing the sustainability of development	2	Applying information technologies
International partners	indicators for assessing the sustainability of development	3	International interaction
Links with Publicity and other stakeholders	indicators for assessing the sustainability of development	4	Creation links with Publicity and other stakeholders
Market value +- development costs	Financial indicators	5	Merger & Acquisition participation
Society development costs	indicators for assessing the sustainability of development	6	Worse legislation, additional restrictions appearance
Personal market position +- membership	compliance with the goals and objectives of the competitive strategy	7	New market players appearance
Net profit	Financial indicators	8	Average industry profitability falling
Information technologies costs	a factor like the possibilities is accepted with the opposite sign	9	Company's technological aging of business processes

The MMC EFAS total score as 1.10 can be interpretated as the favorable company's external environment.

For making the Modified Matrix for Consulting company of Internal Factors Analysis Summary MMC IFAS (table 4) the analogic algorithm as described for MMC EFAS can be used.

Table 4. Modified Matrix for Consulting of Internal Factors Analysis Summary (MMC IFAS)

№	Internal Factors	Weight of the Factor, which is measured by the Strategist (a)	Expert Weight of the Factor (a_{exp}) [8]	Expert Summary Score of the Factor (S_{exp}) [8]	Weighted Factor Value (FV = a * S_{exp})	Comments
1	**2**	**3**	**4**	**5**	**6**	**7**
Strengths						
1	Experience in Subject	15%	-0.08	6.00	0.90	indicators of competitive strategy evaluation
2	Portfolio	10%	-0.04	3.00	0.3	indicators of competitive strategy evaluation
3	Licenses	10%	0.04	7.00	0.70	indicators of competitive strategy evaluation
4	Membership in profile associations and unions	5%	-0.16	12.00	0.60	indicators for assessing the sustainability of development
5	Reference letters	10%	0.08	12.00	1.20	indicators of competitive strategy evaluation
6	Absence of claims	3%	-0.08	2.00	0.06	indicators of competitive strategy evaluation
7	Own working methodologies	10%	0.00	10.00	1.00	indicators of competitive strategy evaluation
Total Strengths Estimation:					**4.76**	
Weakness						
1	Small number of permanent customers	10%	0.48	-20.00	-2.00	indicators of competitive strategy evaluation
2	Lack of Financial Resources	10%	0.36	-14.00	-1.40	financial indicators (net profit)
3	low level of customer payment culture	2%	-0.36	-9.00	-0.18	financial indicators (profitability of each project)
4	Small development costs	5%	0.44	-17.00	-0.85	indicators for assessing the sustainability of development
5	Small marketing costs	2%	-0.16	0.00	0.00	indicators of competitive strategy evaluation
6	Small publicity costs	1%	-0.28	0.00	0.00	indicators of competitive strategy evaluation
7	Small innovative costs	5%	0.20	-8.00	-0.40	indicators for assessing the sustainability of development
8	Small personnel	2%	-0.08	-5.00	-0.10	financial indicators (the share of staff salaries in the cost of the project)
Total weakness Estimation:					**-4.93**	
MMC IFAS TOTAL SCORE					**-0.17**	

(Proposed by the Author)

Detailed factors can be separated into additional table (table 5).

Table 5. Additional information for MMC EFAS

Indicator [8]	Group of Indicators [3]	#	Internal Strategic FACTORS
1	**2**	**3**	**4**
Experience in Subject	indicators of competitive strategy evaluation	1	Experience in Subject
Portfolio	indicators of competitive strategy evaluation	2	Portfolio
Licenses	indicators of competitive strategy evaluation	3	Licenses
Membership in profile associations and unions	indicators for assessing the sustainability of development	4	Membership in profile associations and unions
Reference letters	indicators of competitive strategy evaluation	5	Reference letters
Absence of claims	indicators of competitive strategy evaluation	6	Absence of claims
Own working methodologies	indicators of competitive strategy evaluation	7	Own working methodologies

Continuation of table 5

1	2	3	4
Number of permanent customers	indicators of competitive strategy evaluation	8	Small number of permanent customers
Net profit	financial indicators (net profit)	9	Lack of Financial Resources
Profitability of each project	financial indicators (profitability of each project)	10	low level of customer payment culture
Development costs	indicators for assessing the sustainability of development	11	Small development costs
Marketing costs	indicators of competitive strategy evaluation	12	Small marketing costs
Publicity costs	indicators of competitive strategy evaluation	13	Small publicity costs
Innovative costs	indicators for assessing the sustainability of development	14	Small innovative costs
The share of staff salaries in the cost of the project	financial indicators (the share of staff salaries in the cost of the project)	15	Small personnel

The MMC IFAS total score as -0.17 can be interpretated as the necessity to improve some internal factors, for example, to increase resources.

Next step is compilation the results of MMC EFAS (table 2) and MMC IFAS (table 4) into one complex table of MMS SFAS (table 6), which can be used for further visualization.

Table 6. Total results for MMC SFAS

Type of Analysis	**Strategic Factors' group**	**Summary Strategic Factors' group Estimation***	**Total Score***
MMC EFAS	Opportunities (O)	5.70	1.10
	Threats (T)	-4.60	
MMC IFAS	Strengths (S)	4.76	-0.17
	Weakness (W)	-4.93	
TOTAL SFAS**		**0.93**	**0.93**

* - from the table 2 and table 4

** - SFAS total score = MMC EFAS total score + MMC IFAS total score

In general, it can be made a conclusion that the analyzed consulting company should use its favorable external opportunities by improving its internal environment. But using only table data makes hard to estimate the level general positive and negative factors (fig. 1). Correct results of this estimation could help to take int account the life stage of the company.

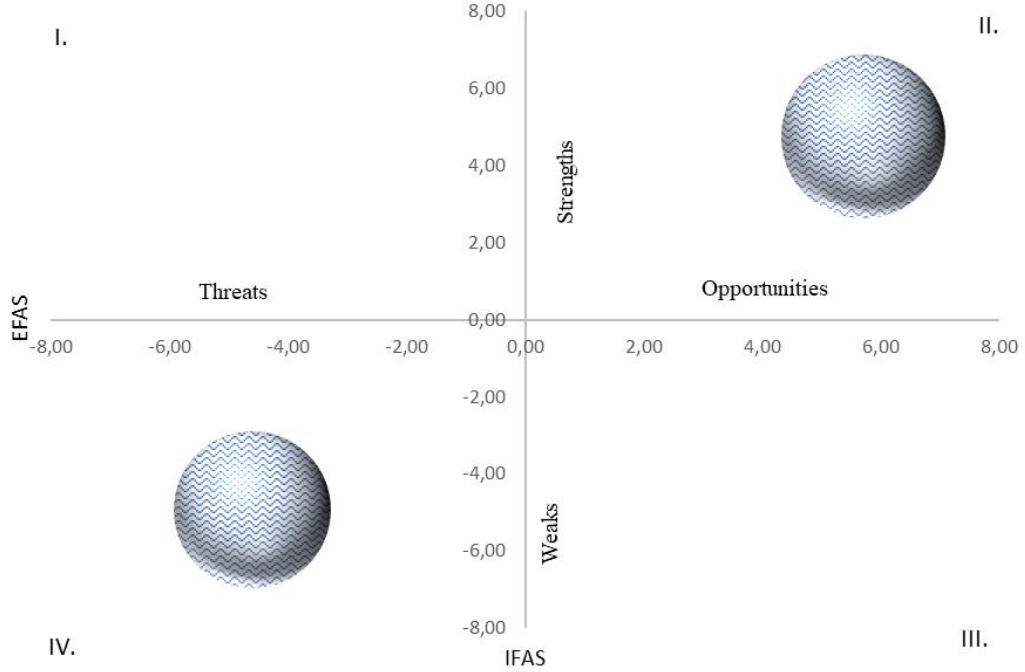

Fig. 1. Bubble chart for MMS SFAS results [Proposed by the Author]

So, comparing the size of two bubbles in positive (B_p) and negative (B_n) quadrants its can be said that company has almost equal opportunity as for successful development as for the failure. Thus, the bigger is positive bubble (B_P) the more chance for success has the company. But also, this can help to understand company's life-stage (table 7).

Table 7. Variants of quadrants bubbles comparison (MMC IFAS)

Indicator	Variants		
	$B_p > B_n$	$B_p \approx B_n$ ($B_p = B_n$)	$B_p < B_n$
Risks of successful strategy implementation	low	medium	high
Level of uncertainty	low	high	low
Probability of success provided the current situation persists	75%-100%	50%	0%-25%
The need for additional use of management tools	ні	так	так
Company's life-stage	Seeds, Start-Up, Growth	Maturity	Decline

(Proposed by the Author on the base of table 6, figure 1 and [1; 2; 9; 13;14])

So, in case the company made its MMC SFAS in 2010 and it received the summary positive factors estimation (opportunities + strengths) B_{p2010} = 13.15 and summary negative factors estimation (threats + weakness) B_{n2010} = 5.8 the comparing results chart can be done (fig.2).

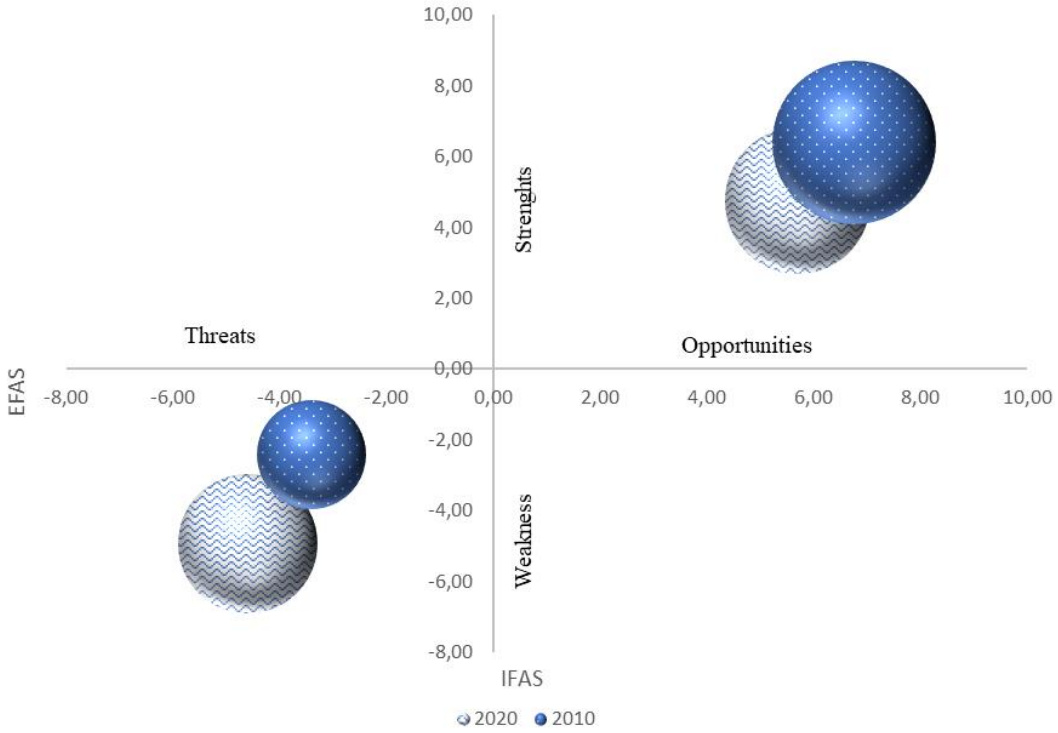

Fig. 2. Dynamic bubble chart for MMS SFAS results [Proposed by the Author]

In 2010 positive factors strongly predominated comparing to negative ones. Thus, the conclusion about company's seed-growth life-stage can be made and proper decisions can be done.

The described MMC IFAS, MMC EFAS and MMC SFAS also could be completed with the stakeholder analysis [7]. The AA1000 Stakeholder Engagement Standard [15] can be used as a basic statement with quality characteristics for stakeholder's estimation. So, the decision-maker may choose any characteristics. But for further visualization the quantity data are also required.

In this paper it is proposed to use the 5-score system [14], where the 1 score will mean the minimal power (white color), 3 scores – medium power (light color) and 5 scores – maximal power (dark color). So, taking the list of main stakeholders from previous research [7] the basic heat table for visualization can be constructed (table 8).

Table 8. Consulting Company's Stakeholders heat table

Consulting Company's Stakeholders	Influence Power	Dependence from the Company
Consumers	5	3
Competitors	5	1
Media	1	1
"Green" organizations	1	1
Authorities	3	1
Working staff	5	5
Management	5	5
Owner	5	3

The petal chart (fig.3) is proposed for creating a stakeholders map no the base of data from the table 8.

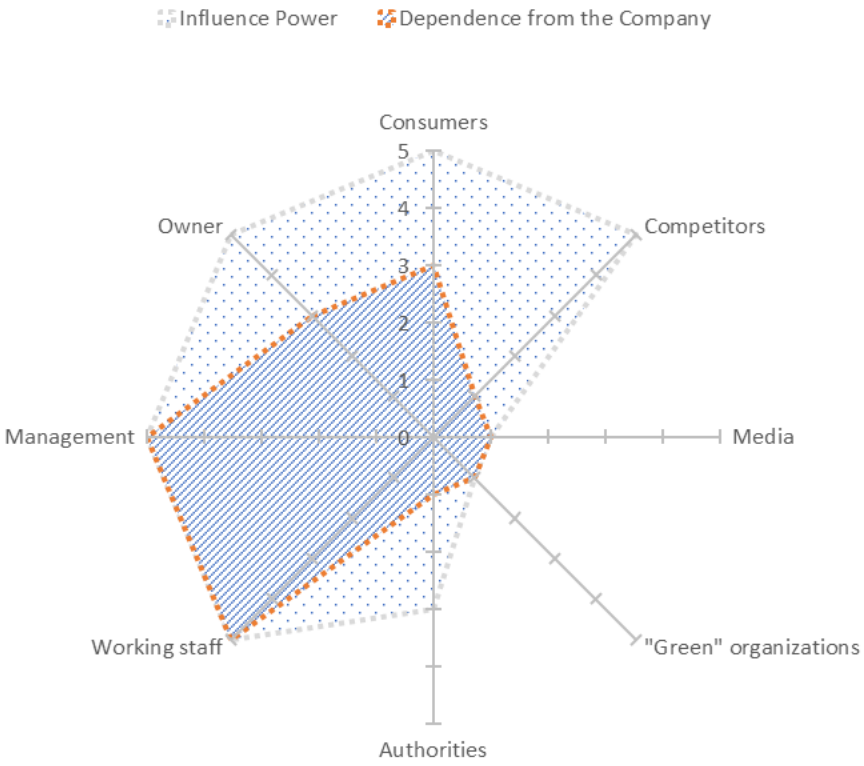

Fig. 3. Stakeholders map for consulting company [Made by the Author on the base of table 8]

So, the company has a low market power in quite opposite to its stakeholders.

Discussion. Thus, the problem of choice the most effective management tools is always actual and have different approaches for solving. But in any case, for decision-maker it is important to possess as actual quality information as quantity data, which in the most cases are private. Also, it is necessary to consider the industry specific and the size of a company. That is why different research and expert opinions should be studied before creating a perfect practical tool for certain company.

Conclusions. The proposed analytical management tools combine the results of different investigations in specific consulting industry. The problem of getting quantitative characteristic for applying modern analytic tools is proposed to be solved. Using industry experts' estimations can help to improve the most popular analytical tools and combining them with elements of risk-management in the part of using probability scales can also help to choose the correct way of further company's development. This could help to diagnostic the company's life stage for quick and correct further strategy formation process.

By using the whole scope of proposals, the objective strategic evaluation of current company's position can be received as a successful result of analytical stage of development strategy formation process for consulting companies. But a lot of factors, which any strategist put in the basic scope of the analysis still can be investigated by other researchers.

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