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METHODOLOGY OF ECONOMIC AND MATHEMATICAL ASSESSMENT FORMATION OF HOLDING STRUCTURES ACTIVITIES

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Abstract. The author's definition of "a holding structure" is proposed in the article. A number of factors that make up the prerequisites for integration processes in the business of the holding union type are analyzed. The mechanism of economic and mathematical evaluation of the holding companies is investigated through introduction of the expediency assessment coefficient of economic restructuring of holding structure subsidiaries, the profitability ratio of a holding structure in the process of its formation, and the current profitability factor of a holding structure during follow-up. The calculation of the proposed indicators on the basis of the financial statements of the Corum Group Engineering Holding and its subsidiaries is fulfilled.

Key words: holding structure, affiliate, economic restructuring, the coefficient of expediency of economic restructuring, profitability ratio of a holding structure, methodology of assessment.

Formation of the problem. Progressive development of economy, steady progress in scientific and technical fields and emergence of creative approaches in management provoke the expansion of integration processes at micro and macro level. The question of the union of enterprises is especially pressing both at the time of structural reconstruction of the country's economy and in terms of various crisis situations and at the time of stable functioning.

On the basis of intertwining monopoly and competition and also simultaneously with improvement of business activities types there are being developed and formed new types of relations between individual enterprises and there are being created different variants of their unions. With development of the economic system some types of unions gradually lose their viability and under existing conditions they become irrelevant while others on the contrary begin to develop and their number is growing.

There is a sufficient number of motives for integration and conduct of joint activity between individual enterprises but they are different for a specifically taken enterprise. The following motives are the defining ones: the reduction of tax burden; the conquest of new sales markets; the search for more favorable conditions of purchasing raw materials and constitutive elements; the access to the latest scientific and technical potential; the expansion of the field of information support; the reduction in costs and risk sharing when forming additional production capacities; the mastering of new arenas of production and economic activities; the expansion of the geographical penetration zone; the need in significant capital investments; management efficiency improvement; strict "game rules" in the modern market and an extremely high level of competition [21, p. 238].

Implementation of the list of motives for the union of enterprises makes it possible to significantly improve the efficiency of their functioning which covers an increase in production capacity, increase in competitiveness, more qualitative management of organization which is very significant for today from an economic point view.

There exist a sufficient number of ways and forms of union, the choice of the most acceptable one depends on financial and economic condition of organization and economic situation in the country in general. Today the practice of holding structures creation, efficiency of which is shown by foreign experience, has become rather widespread. It is impossible for Ukraine to fully adopt foreign practice of holdings creation since the domestic

economy is characterized by a number of its features but it can use it as the basic one.

Analysis of recent research and publications. A number of scientists, namely: M.M. Leshchenko, L.I.Donets, O.M.Ivashchenko, H.V. Mys'kiv, N.V.Shevchenko, S.V. Naumenkova, B.I. Siurkalo, M.B. Naichuk-Khrushch, N.Ye. Seliuchenko, V.V. Kozyk, O.V. Shaposhnikov and many others were engaged in the research of theoretical and methodological foundations of holding structures of Ukraine functioning and foreign holding companies. However, it is worth noting the insufficient level of scientific disclosure of the selected themes and the need for further development of the scientific direction associated with the assessment of holding structures involving economic restructuring.

The objective of the article. The main idea of the article is methodology of economic and mathematical assessment formation of holding structures activities.

The presentation of the main material of the research. Currently holding companies are the most popular form of the union. It is believed that holding companies appeared in the 19th century namely in 1888-1889 when legislation in the USA in the state of New Jersey gave companies the permission to purchase and possess the stock shares of one or more other firms [18, p.125].

Management of holding structures in the period of transformation processes in the economy remains topical which in turn assigns a new task to a holding structure – the participation in the process of economic restructuring of subsidiary enterprises.

In our opinion, a holding structure is a form of joint-stock company which is created for the purpose of possessing stock block of subsidiaries and the establishment of monitoring at all levels of subsidiary enterprises (production, finances, marketing, human resources policy, investment activities, management) forming relationships with all their structural units partially differentiating the functions of control including performing the coordination, monitoring and supervision under the conditions of economic restructuring of an enterprise [5; 3, p.64].

Holding structures in Ukraine are functioning in accordance with the national law. Public policy as a mechanism of administrative and legal regulation of economic and social processes plays a leading role in the formation and adjustment of activities of enterprises [6, p. 33-34].

Assessment of the activities of a holding structure is complex and multistage process. Typically, in such a way the assessment is conducted on the basis of the financial statements of subsidiaries and consolidated accounting of a holding structure [1, p.10]. At present, there exists a list of financial coefficients that are used in the process of analysis and financial management, namely: the indicator of consolidated profit of a holding structure; the coefficient of profitability of holdings creation; the coefficient of the value of management; the indicator of investment attractiveness of potential subsidiaries; the indicator of the level of economic efficiency of the formation and activities of a holding structure; the indicator of portfolio risk of a holding structure; the coefficient of financial independence of subsidiaries; the ratio coefficient of borrowed and equity capital; the coefficient of financial stability of a holding company; the level of self-financing of subsidiaries; the coefficient of corporateness [7, p. 30; 8, p.121; 9, p.118; 10, p.10-11, 11, p.98-101, 13; 14; 15].

Having accomplished the review of the literature on the problems of assessment and efficiency of holding structures and having analyzed the shortcomings of existing indicators the introduction of the expediency coefficient of a holding structure economic restructuring (k_{ER}^{d}) should be considered important.

The expediency coefficient of economic structure depends on many conditions which are to be checked when calculating this particular coefficient.

The expediency coefficient of individual enterprises economic restructuring will be influenced by such constituents:

1) the losses of enterprise and their change (increase in losses will be indicative of the expediency of carrying out economic restructuring, L);

2) a significant change of company's profit (reduction of the profit level and its transition into the category of losses will be indicative of the expediency of carrying out economic restructuring, P);

3) a significant change in the volume of payables (excessively large payables are indicative of the solvency loss possibility and the transition to unstable financial condition and complete crisis state of an enterprise that is the basis for immediate restructuring Ps);

4) a significant change in the amount of receivables (an unjustified increase in receivables is not a positive tendency for enterprise since it increases the level of the riskiness of business dealing and like payables it is indicative of an unstable financial condition, Rs).

In other words, the coefficient of economic expediency of economic restructuring can be entered if at enterprise there is met at least one of these conditions:

$$\begin{cases} I_1 = \dfrac{L^1}{L^0} > 1 \\ I_2 = \dfrac{P^1}{P^0} < 1 \\ I_3 = \dfrac{AP^1}{AP^0} > 1 \\ I_4 = \dfrac{AR^1}{AR^0} > 1 \end{cases}, \quad (1)$$

If the enterprise's financial state is unstable one of the following conditions when enterprises' profits go to category of losses and losses respectively increase can be done:

$$\begin{cases} I_1 = \dfrac{L^1}{L^0} > 1 \\ I_2 = \dfrac{P^1}{P^0} < 1 \end{cases} \rightarrow \text{or } I_2 = \dfrac{L^1}{P^0} < 1,$$

or $$I_2 = \dfrac{L^1}{P^0} \gg 1, \quad (2)$$

where I_1, I_2, I_3, I_4 are the indicators of conditions fulfilment for expediency of the introduction k_{ER}^d; $\dfrac{L^1}{L^0}$ is the ratio of a subsidiary losses of the analyzed period L^1 to the losses of the previous period L^0 (normative value of this ratio should be greater than unity); $\dfrac{P^1}{P^0} < 1$ is the profit ratio of the analyzed period of a subsidiary to the profit of the previous period (normative value should be less than unity); $\dfrac{AP^1}{AP^0} > 1$ is the ratio of the payables amount of the subsidiary's analyzed period AP^1 to the amount of payables of the previous period AP^0 (normative value – greater than unity); $\dfrac{AR^1}{AR^0} > 1$ is the ratio of the receivables amount of the subsidiary's analyzed period AR^1 to the amount of receivables of the previous period AR^0 (normative value – greater than unity); $\dfrac{L^1}{P^0}$ is the ratio of the subsidiary's losses of the analyzed period L^1 to the profit of the previous period P^0.

However, complex fulfillment of the above conditions is also possible. In such a situation we introduce gross coefficient g_i ($i = \overline{1,4}$) where there is a closed system that means that there is considered the equality of the performance of four indicators $g_1 = g_2 = g_3 = g_4 = 0,25$, $g_1 + g_2 + ... + g_4 = 1$.

The situation in which at least one of the suggested ratios of the system corresponds to the critical range of normative value is evidence of the need for the introduction of the expediency coefficient of economic restructuring.

So,

$$k_{ER}^d = g_1 \times I_1 + g_2 \times I_2 + g_3 \times I_3 + g_4 \times I_4 \quad (3)$$

If at least one of the suggested ratios of the system has a deviation from a normative value it is evidence of the expediency of economic restructuring implementation.

As the example, for calculation we will take the indicator of financial activities of Corum Group Engineering Holding which consists of the following companies: Druzhkivka Engineering Plant JSC, Horlivka Engineering Plant JSC, Donetskhirmash JSC and Corum Shakhtspetsbud LLC.

1. Druzhkivka Engineering Plant JSC:

$$\frac{L^1}{L^0} = \frac{56440}{27585} = 2,05; \quad \frac{P^1}{P^0} = \frac{125437}{193814} = 0,65;$$

$$\frac{AP^1}{AP^0} = \frac{3750}{10117 + 125223} = 0,03;$$

$$\frac{AR^1}{AR^0} = \frac{257124 + 65170 + 7150}{148200 + 32758 + 5816} = 1,76.$$

Thus,

$$k_{ER_1}^e = 0,25 \times 2,05 + 0,25 \times 0,65 + 0,25 \times$$
$$\times 0,03 + 0,25 \times 1,76 = 1,12.$$

2. Horlivka Engineering Plant JSC:

$$\frac{L^1}{L^0} = \frac{10198}{17200} = 0,59; \quad \frac{P^1}{P^0} = \frac{249252}{198347} = 1,26;$$

$$\frac{AP^1}{AP^0} = \frac{12750 + 582}{58200 + 1120} = 0,22;$$

$$\frac{AR^1}{AR^0} = \frac{98136 + 68750 + 25471}{75782 + 23516 + 7727} = 1,8.$$

$$k_{ER_2}^e = 0,25 \times 0,59 + 0,25 \times 1,26 +$$

$$+ 0,25 \times 0,22 + 0,25 \times 1,8 = 0,97.$$

3. Donetskhirmash JSC:

$$\frac{L^1}{L^0} = 0; \quad \frac{P^1}{P^0} = \frac{86375}{47498} = 1,82;$$

$$\frac{AP^1}{AP^0} = \frac{43950 + 28879}{19670 + 7181} = 2,71;$$

$$\frac{AR^1}{AR^0} = \frac{26785 + 13812 + 4125}{28300 + 15711 + 5137} = 0,9.$$

$$k_{ER_3}^d = 0,25 \times 0 + 0,25 \times 1,82 + 0,25 \times$$

$$25 \times 2,71 + 0,25 \times 0,9 = 1,36.$$

4. Corum Shakhtspetsbud LLC:

$$\frac{L^1}{L^2} = 0; \quad \frac{P^1}{P^0} = \frac{42800}{55125} = 0,8;$$

$$\frac{AP^1}{AP^0} = \frac{20430 + 8160}{12800} = 2,23;$$

$$\frac{AR^1}{AR^2} = \frac{10080 + 13381 + 2300}{12989 + 17220 + 9500} = 0,65;$$

$$k_{ER_4}^d = 0,25 \times 0 + 0,25 \times 0,8 + 0,25 \times$$

$$\times 2,23 + 0,25 \times 0,65 = 0,92.$$

Having calculated k_{ER}^d we suggest calculating the profitability of a holding structure in the process of its formation $P_{HS_{\text{in the process of its formation}}}$ that is expedient to be calculated according to the suggested model:

$$P_{HS_{\text{in the process of its formation}}} =$$

$$= \frac{P_{PC} \times R_{PC}^L + P_S^1 \times R_1^L \times k_{ER_1}^d + ... + P_S^n \times R_n^L \times k_{ER_n}^d}{E_1 + E_2 + ... + E_n}, (4)$$

where P_{PC} – is net profit of a parent company; – is net profit of the 1st subsidiary; P_S^n – is net profit of the nth subsidiary; R_{PC}^L – is risk of the profit loss by a parent company; R_1^L – is risk of the profit loss by the 1st subsidiary; R_n^L – is risk of the profit loss by the nth subsidiary; $E_1, E_2, ..., E_n$ – are diverse expenses of a holding structure.

It is difficult to calculate accurately the risk of the profit loss (R) since it is practically impossible to take into account all the factors that affect the change of its value. Quantitative determination of risk in absolute terms does not always provide the possibility to accurately assess the riskiness of certain activities conduct. In order to find a compromise and take into account the value of equity funds there are introduced the dimensionless indicators. All of them are risk coefficients and each time it is conditioned what kind of risk is meant [19, p 64].

For example, risk coefficient of total losses of an enterprise uncovered by the value of own equity will be calculated according to the formula suggested by [4]: $R = \frac{L \times P}{EF}$ where L is the maximum value of total losses of an enterprise uncovered by the value of own equity; P is the probability of losses; EF is the value of own equity.

Acceptable risk is in the boundary limits which are controlled as part of financial management system according to the expenses size of holding structure subsidiaries activities [20].

In the literature various authors suggest the scale of gradations from minimum to maximum values for aforementioned risk coefficient that make it possible to be well versed in their values.

According to [4] we suggest using the following scale of risks gradations (tabl. 1).

While calculating the profitability of a holding structure in the process of its formation and evaluation of profitability of its further activities we will use acceptable level of risk according to the scale – 20% [16, p.98].

Then we need to focus on analyzing and determining the expenses of a parent company of a holding structure. Taking into consideration a large scale of a holding structure, the system of expenses must be clearly formed and divided into expenses of a parent company (of higher level) and expenses of subsidiaries (of lower level). The holding structure is created for the purpose of activities financial management of subsidiaries system thus acting as the core of financial allocation, planning and control [2, p. 40; 17, p. 92].

A parent company being a control center may carry out a number of expenses which will be combined into four groups according to the rules of bookkeeping and tax reporting [12, p.141]:

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Scale of acceptable values of profit loss risk coefficient

Gradation of risk	Acceptable value
Acceptable	<0,25
Permissible	0,25-0,5
Critical	0,5-0,5
Catastrophic	> 0,75

– administrative expenses (expenses on auditing services, expenses and ensuring current activities of a parent company (utilities, etc.), expenses on marketing services, expenses on training of management team (seminars, courses, presentations and business trainings). Expenses on improving knowledge and skills of management team of a holding structure is an important item of expenses since effective functioning of such a complex, multifaceted and wide network formation as a holding structure depends on the quality of management process) (E_1);

– financial expenses (expenses on purchasing controlling stakes of subsidiaries at the time of holding structure formation; expenses on restructuring measures at the enterprises which are its structural units and are in the state of solvency loss, expenses on implementing domestic crediting of subsidiaries, the expenses caused by additional emission of shares, expenses on paying dividends to shareholders of a holding structure) (E_2);

– expenses on wages (expenses on wages, expenses associated with taxing (payroll taxes, social contributions for employees of a holding structure administration) (E_3);

– other expenses (expenses on scientific, technical and technological innovations; expenses associated with the creation of reserve funds; insurance expenses of various types of risks; expenses on acquisition of new offices, cars that serve the needs of a parent company; expenses on obtaining patents, inventions) (E_4).

The calculation of current profitability indicator of a holding structure R_{HS}^* will be the next stage after calculating the profitability of a holding structure in the process of its formation. By the current profitability of a holding structure we mean the profitability of the already formed and operating structure which combines the activities of the appropriate number of subsidiaries in contrast to the profitability of a holding structure in the

process of its formation by which we understand the activities in the process of its organization with the participation of economic restructuring of subsidiaries in fact in unfinished process.

Coefficient R_{HS}^* will be calculated according to formula:

$$P_{HS}^* = \frac{P_{PC} \times R_{PC}^L + P_S^1 \times R_1^L + ... + P_S^n \times R_n^L}{\sum E}, \quad (5)$$

where P_{PC} – is net profit of a parent company; P_{PC}^1 – is net profit of the 1st subsidiary; P_{PC}^n – is net profit of the nth subsidiary; R_S^L – is risk of profit loss by a parent company; R_1^L – is risk of profit loss by the 1st subsidiary; R_n^L – is risk of profit loss by the nth subsidiary; $\sum E$ – are total expenses of a holding structure.

Total expenses are equal to the sum of all current expenses which a holding structure has in the process of functioning, a list of which is given above:

$$\sum E = E_1 + E_2 + ... + E_n , \quad (6)$$

Thus, we will calculate the profitability of a holding structure Corum Group: in the process of its formation:

$$P_{HS_{\text{in the process of its formation}}} =$$

$$= \frac{138787 \times 0,2 + 125437 \times 0,2 \times 1,12 + 249252 \times 0,2 \times 0,97 + 86375 \times 0,2 \times 1,36 + 42800 \times 0,2 \times 0,92}{677658 + 418180 + 2116789 + 219045} =$$

$$= 0,0395.$$

After the completion of formation process we can calculate current profitability of a holding structure. After formation process completion of a holding structure the groups of expenses remain unchanged, however the list of expenses attached to a certain group change. So, for example while calculating we will not include expenses on purchasing controlling stakes of subsidiaries, expenses on restructuring measures at enterprises which are its structural units and are in the state of solvency loss, expenses on domestic crediting of subsidiaries and other expenses.

So,

$$P_{HS}^* = \frac{138787 \times 0,2 + 125437 \times 0,2 + 249252 \times 0,2 + 86375 \times 0,2 + 42800 \times 0,2}{677658 + 418180 + 2116789 + 219045} =$$

$$= 0,0375.$$

Thus, in the example case of the existing methodology process for evaluation of holdings we see that the current profitability of an existing holding structure is almost the profitability as a holding structure at the time of its formation. Reducing the costs of different categories will continue to increase the profitability of the holding structure.

Conclusions and perspectives for further research. Financial management and complex formation assessment of a holding structure with the participation of economic restructuring is a complex process influenced by a number of factors and conditions which were analyzed in the paper. Great importance belongs to expediency assessment coefficient of economic restructuring of a holding structure subsidiaries and to a complex of conditions and indicators and gross coefficient of each ratio. However, the determination of a complete list of such factors requires further research.

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THEORETICAL AND APPLIED PRINCIPLES OF ANTICIPATORY MANAGEMENT OF ENTERPRISES ON THE BASIS OF WEAK SIGNALS

Abstract. In the article the actuality of anticipatory management of enterprises on the basis of weak signals in modern highly dynamic, uncertain and unpredictable operating conditions is grounded. The concept of anticipatory management of enterprises on the basis of weak signals by the process-structured approach is formulated. The methodology of evaluation of anticipatory management effectiveness implementation at the enterprises is characterized and the most popular results of anticipatory management fulfillment at investigated enterprises are shown.

Key words: anticipatory management, weak signals, system, effectiveness, coefficient, enterprises.

Introduction.. In modern business environment, which is characterized by such features as critical dynamism, unpredictability and uncertainty, management of any enterprise should be aimed at anticipating the future changes of external and internal operating conditions to ensure its goal-oriented, progressive and effective development. It concerns critical growing deficit of time and information resources for a decision-making process that strengthens a threat of the retarded or inadequate response to the changes of enterprises' operation conditions. The forced development of the modern globalized business environment requires from managers of all levels to make decisions in maximally short time period due to its intense changes and transformations. In addition, in the current functioning conditions managers and professionals are increasingly faced with not clear, understandable or incomplete by content data that require its accurate analyzing and interpretation. In management science, scholars interpret these informational messages as weak signals of the potential events in the business environment [1, p. 65].

The situation described above causes a peculiar management dissonance because the necessary condition to ensure the maximum effectiveness of management activity is the implementation of a completed management technology that is based on the adequate information support and requires the appropriate time costs for its fulfillment. One of the perspective directions to solve this problem is to use the anticipatory management as the actual addition to the enterprise's management system from the position of improving its interaction with the internal and external environment on the basis of increasing the level of enterprise's preparation to any potential changes in the operating conditions [1, p. 65].

Existing complicated business conditions require the displacement of monitoring management tasks to take into consideration the weak signals as early primary signs of possible emergence of opportunities and threats in the operating environment in order to improve the enterprise's preparation to future changes. In the context of ensuring the early diagnostics of potential events and developing the adequate preventive measures the anticipatory management of enterprises takes relevance because it is aimed at the polyvectorial investigation of weak signals about future changes in business environment and making rational management decisions with anticipatory direction at opportunities and threats of operating conditions. It forms enough time reserve for a well-grounded preventive decision-making process of exploiting opportunities or eliminating threats of enterprise's operating conditions. Everything mentioned above causes a need to characterize the key theoretical and applied bases of anticipatory management at the enterprises.

Analysis of recent researches and publications. Although the anticipatory management is a relatively new type of management in the scientific sphere, but the theoretical and applied principles of its implementation are reflected in researches of such Ukrainian and foreign scientists, as: I. Ansoff, I. Baklan, N. Bohonikolos, L. Huryanova, W. Ashley, L. Yegorova, T. Klebanova, P. Kuokkanen, Yu. Lysenko, L. Lihonenko, O. Moroz, J. Morrison, Zh. Poplavska, V. Potokan, A. Rohovych, R. Rudenskyy, O. Smetanyuk, E. Hiltunen [2–12] and others. Scientific developments of these authors reveal different peculiarities of anticipatory management of the whole enterprise or its certain kinds of activity, in particular, theoretical and methodological principles of anticipatory management, characteristics of its information support, methods of identifying and analyzing the weak signals in operating environment, the process of anticipatory decision-making.

However, the fragmented nature and the existing gaps in scientific investigations on the problem greatly hinder organic development of anticipatory management in the business environment and lead to a number of important scientific problems, which should be solved. In particular, there is a need to form the unified, completed and well-grounded theoretical base of anticipatory management implementation at the enterprises. As the experience with anticipatory management has not been accumulated yet at Ukrainian and foreign enterprises there is also a necessity to analyze the effectiveness of anticipatory management implementation at the enterprises. It will give an opportunity for managers of all management levels to understand the essence of anticipatory management and its impact on the effectiveness of enterprise's activity.

The purpose of the research. The main purpose of the article is to ground the theoretical and applied principles of anticipatory management of enterprises on the basis of weak signals.

The presentation of the main research material. In today's complicated functioning conditions anticipatory management is an integral part of the enterprise's management process that provides its development in the direction of improving its interaction with the internal and external business environment. The rapid spread of current trends of increasing the uncertainty and unpredictability of operating conditions complicates the problem of timely and adequate response to any change in the business environment. It is caused by the growing deficit of resource support (especially time and information) of management processes at the enterprises, especially the decision making. In response to everything above mentioned anticipatory management provides a mechanism of anticipation the future events in the business environment that is based on the recognition of weak signals and interpretation of their further development to specific opportunities or threats of enterprise's operating conditions for timely respond to those changes in the business environment [1, p. 66].

The results of literature study in the management sphere and practice of enterprise's functioning indicate that at present time the term "anticipatory management" is little known and not widely used in theoretical and applied level. At the same time it is found that immanent for anticipatory management operations of identifying and processing of weak signals in the operating environment, prediction of their future development to particular events, preventive decision-making process, etc. have been the object of research of cohort of Ukrainian and foreign scientists, as well as they have found practical application in the activity of some enterprises. It confirms the importance of the implementation of these operations within the management process of the enterprise. In order to ensure the organic functioning of all processes associated with weak signals about future changes in operating conditions as a holistic management mechanism of the enterprise their combination, consideration and implementation in the context of the specific management function – anticipatory management is proposed.

Having studied the literature on the problem and the practice of functioning of the domestic and foreign enterprises it has been suggested to interpret the term "anticipatory management of enterprise" as a goal-oriented activity that provides early identification of potential events in the internal and external environment on the basis of

polyvectorial investigation of weak signals and development on this basis the anticipatory scenario in order to make rational management decisions with anticipatory direction at opportunities and threats of enterprise's operating conditions. The anticipatory scenario shows a set of probabilistic and alternative trajectories of weak signals development to possible events and a complex of adequate measures of enterprise's reaction.

It is worth mentioning that in the management theory the term "anticipatory management" is often equal to the term "crisis management", which is not correct because of the established significant differences between these types of management by such parameters as their information support, targeted and polar direction, scale of realization, tool support, sphere of its use, etc.

In the process of performed research it has been found that in today's complex conditions of functioning anticipatory management is an objectively necessary element of enterprise's management system, which improves its interaction with the operating environment by increasing the level of enterprise's preparation to different potential internal and external events. In particular, in the conditions of dynamic changes of the business environment anticipatory management provides early identification of potential events on the basis of recognition and predictive interpretation of weak signals, which are reported about their appearance. It forms a considerable time allowance for reasonable development of measures and timely decision-making in order to use the identified opportunities or eliminate the threats of enterprise's operating conditions.

Anticipatory management on the basis of weak signals gives also an opportunity to reduce the level of uncertainty of business environment because it is directed at differently-vectorial processing of not clear and incomplete by content information messages about the future changes of operating conditions, as well as predictive supplementing of their essence in order to create a well-grounded base of the potential occurrence of particular positive or negative events in the future activity of the enterprise.

Anticipatory management of enterprises is based on weak signals as key elements in implementation of its specific assignment. The fundamental idea of anticipatory management is based on the fact that any potential event is characterized by a period of its development from weak signals to strong signals. Having studied the literature on the problem [2; 5; 8] it has been proposed to interpret the weak signals as early signs of future changes in operating conditions which are reporting about the appearance of potential events and their sources in internal and external environment. To ensure the complex anticipatory monitoring of operating environment signals of potential events have been systematized by kinds of enterprise's activity: production, activity of scientific and technological preparation of production, financial and economic activity, marketing, logistics, social and human resources activity, foreign economic activity.

The results of performed research give an opportunity to formulate the concept of anticipatory management of enterprises on the basis of weak signals, which is based on anticipatory management system as an ordered set of technology, methods, management decisions, leadership, communications, controlling and controlled subsystems (Fig. 1). These elements interact with each other in the direction of effective anticipation of potential events in the internal and external environment in order to increase the level of enterprise's preparation to future changes of operating conditions.

Anticipatory management of enterprises is based on the classic sequence of process-structured management, but each stage is characterized by its specific meaningfulness to achieve the anticipatory goals. Therefore, anticipatory management of enterprises on the basis of weak signals is fulfilled by such sequence:

1. Consistent implementation of anticipatory management technology through the fulfillment of particular functions (anticipatory planning, anticipatory organizing, motivating the employees who are implementing the anticipatory management, anticipatory controlling and anticipatory regulation).

2. Adequate forming of anticipatory management methods for developing and theoretical grounding of the management mechanisms of influence on the controlled system to achieve the anticipatory goals.

3. Transforming the developed methods of anticipatory management into appropriate management decisions in order to implement effective management influence and achieve the anticipatory goals.
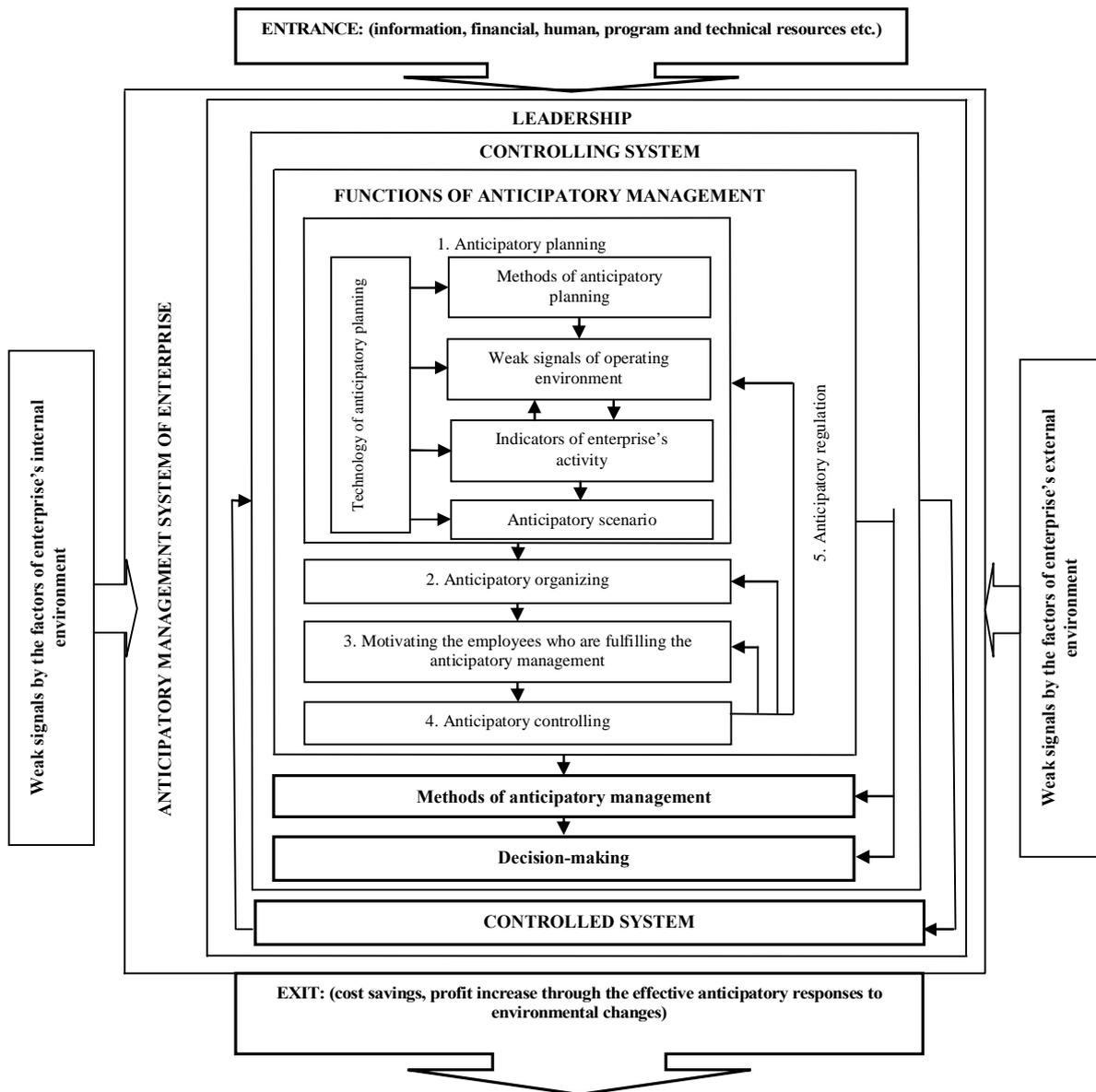
O. Ye. Kuzmin, O. G. Melnyk, M. Ye. Adamiv

ENTRANCE: (information, financial, human, program and technical resources etc.)

LEADERSHIP

CONTROLLING SYSTEM

FUNCTIONS OF ANTICIPATORY MANAGEMENT

1. Anticipatory planning

Technology of anticipatory planning

Methods of anticipatory planning

Weak signals of operating environment

Indicators of enterprise's activity

Anticipatory scenario

5. Anticipatory regulation

2. Anticipatory organizing

3. Motivating the employees who are fulfilling the anticipatory management

4. Anticipatory controlling

Methods of anticipatory management

Decision-making

CONTROLLED SYSTEM

ANTICIPATORY MANAGEMENT SYSTEM OF ENTERPRISE

Weak signals by the factors of enterprise's internal environment

Weak signals by the factors of enterprise's external environment

EXIT: (cost savings, profit increase through the effective anticipatory responses to environmental changes)

Fig. 1. Typical structure of anticipatory management system of enterprises on the basis of weak signals

4. Implementation of the unifying management function that includes all anticipatory management processes in order to ensure their effective fulfillment.Effective implementation and use of anticipatory management on the basis of weak signals at the enterprises should provide the increasing of economic effectiveness of their activity. Anticipatory management is aimed at early identification of potential events in the operating environment and developing the adequate preventive measures. That is why the claim about the possibility of cost savings achieving at the enterprises, increasing profits, improving some indicators is logically grounded. Effectiveness evaluation of anticipatory management implemen-

tation at the enterprise is recommended to be executed in the context of Balanced Scorecard System because of its complex character for diagnostics of key areas of an enterprise's activity. On the basis of materials study of the most universal compositions of indicators within each projection ("Clients", "Internal Business Processes", "Learning and Growth", "Finances") of Balanced Scorecard System the system of effectiveness evaluation indicators of anticipatory management implementation is formed at the enterprise.

Thus, the effectiveness coefficient of anticipatory management implementation by the projection "Clients" (E_c, %) is recommended to be calculated by the following formula:

$$E_c = w_{Vc} \times \left(\frac{V_c^0 - V_c^1}{V_c^0} \times 100 \ \% \right) +$$

$$+ \ w_{Vm} \times \left(\frac{V_m^0 - V_m^1}{V_m^0} \times 100 \ \% \right), \qquad (1)$$

where w_{Vc}, w_{Vm} – are the weighting coefficients of effectiveness components of anticipatory management implementation by the projection "Clients"; V_c^0, V_c^1 – are the costs for meeting the complaints of clients before and after anticipatory management implementation, UAH; V_m^0, V_m^1 – are the costs of market research and communication before and after anticipatory management implementation, UAH.

The effectiveness coefficient of anticipatory management implementation by the projection "Internal Business Processes" (E_b, %) is calculated by such formula:

$$E_b = w_{Kd} \times \left(\frac{K_d^1 - K_d^o}{K_d^0} \times 100 \ \% \right) +$$

$$+ \ w_{Kr} \times \left(\frac{K_r^1 - K_r^0}{K_r^0} \times 100 \ \% \right), \qquad (2)$$

where w_{Kd}, w_{Kr} – are the weighting coefficients of effectiveness components of anticipatory management implementation by the projection "Internal Business Processes"; K_d^0, K_d^1 – are the coefficients of goods production defectlessness before and after anticipatory management implementation; K_r^0, K_r^1 – are the coefficients of timely production before and after anticipatory management implementation.

The effectiveness coefficient of anticipatory management implementation by the projection "Learning and Growth" (E_d, %) is calculated by the following formula:

$$E_d = w_{Ve} \times \left(\frac{V_e^0 - V_e^1}{V_e^0} \times 100\% \right) +$$

$$+ \ w_{Vit} \times \left(\frac{V_{it}^0 - V_{it}^1}{V_{it}^0} \times 100 \ \% \right), \qquad (3)$$

where w_{Ve}, w_{Vit} – are the weighting coefficients of effectiveness components of anticipatory management implementation by the projection "Learning and Growth"; V_e^0, V_e^1 – are the costs of training and retraining of employees before and after anticipatory management implementation, UAH; V_{it}^0, V_{it}^1 – are the costs of information, software and technical support of employees before and after anticipatory management implementation, UAH.

The effectiveness coefficient of anticipatory management implementation by the projection "Finances" (E_f, %) is calculated by such formula:

$$E_f = w_P \times \left(\frac{P_1 - P_0}{P_0} \times 100 \ \% \right) +$$

$$+ \ w_{Kz} \times \left(\frac{K_z^0 - K_z^1}{K_z^0} \times 100 \ \% \right) +$$

$$+ \ w_{Dz} \times \left(\frac{D_z^0 - D_z^1}{D_z^0} \times 100 \ \% \right) +$$

$$+ \ w_{Kk} \times \left(\frac{K_k^1 - K_k^0}{K_k^0} \times 100 \ \% \right), \qquad (4)$$

where w_P, w_{Kz}, w_{Dz}, w_{Kk} – are the weighting coefficients of effectiveness components of anticipatory management implementation by the projection "Finances"; P_0, P_1 – is the net profit before and after anticipatory management implementation, UAH; K_z^0, K_z^1 – are the volumes of payables before and after anticipatory management implementation, UAH; D_z^0, D_z^1 – are the volumes of receivables before and after anticipatory management implementation, UAH; K_k^0, K_k^1 – are the coefficients of enterprise's capitalization before and after anticipatory management implementation.

The integral effectiveness coefficient of anticipatory management implementation (E_i, %) is recommended to be calculated by the following formula:

$$E_i = w_c \times E_c + w_b \times E_b +$$

$$+ w_d \times E_d + w_f \times E_f, \qquad (5)$$

where w_c, w_b, w_d, w_f – are the weighting coefficients of integral effectiveness components of anticipatory management implementation at the enterprise.

It is worth to emphasize that all above represented formulas have a recommended character and may be changed according to the specific conditions of enterprise's internal and external environments. These formulas should be used considering that all other factors are constant.

Within performed specialized investigation of anticipatory management at the most successful domestic machine-building enterprises the key results of implementation and fulfillment of anticipatory management or its elements at these enterprises were determined. The most priority results are: improving the quality of opportunities

use or eliminating threats in the operating environment; increasing the volume of time resources for decision-making process; increasing the level of enterprise's preparation for potential events in the operating environment; increasing the level of information support of managers activity and specialists; expanding the range of opportunities and threats of enterprise's operating conditions; achieving the cost savings of enterprise's activity, improving some indicators of enterprise's activity; providing the goal-oriented, progressive development of enterprise or its certain kinds of activity; improving the quality and efficiency of decision-making process in different spheres of enterprise functioning; improving the quality of strategies formation, different plans, forecasts of the enterprise, etc.

Conclusions. At the present stage enterprises operate in complicated conditions that are characterized by high level of dynamism, unpredictability, uncertainty, variability, increasing competition, the influence of different crisis at governmental and international levels, etc. Such challenges require from managers of any enterprise to search, implement and use the modern progressive mechanisms, technologies and instruments of management in order to improve the existing management system. In this context the anticipatory management is actual and effective type of management because it is aimed at improving the interaction between the management system and enterprise's operating environment in order to increase the level of enterprise's preparation to different future changes of functioning conditions. The concept of anticipatory management of enterprises on the basis of weak signals is based on its system as an ordered set of technology, methods, management decisions, leadership, communications, controlling and controlled subsystems. The effectiveness evaluation methodology of anticipatory management implementation at the enterprise in the context of Balanced Scorecard System is based on the calculating of key indicators before and after implementation of anticipatory management at the enterprise by each projection of its system.

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ABOUT PERSPECTIVE DIRECTIONS OF ESTABLISHMENT
AND FURTHER DEVELOPMENT OF ECONOMIC METROLOGY

Abstract. The characteristic of perspective directions of econometric studies at the present stage is carried out. The following directions like traditional, post-traditional and modern are distinguished. The necessity of establishing an economic metrology as a general theory of economic measurement and a theoretical-methodological basis of econometric science further development is grounded.

Key words: econometrics, economic metrology, metrological economy, metrological behaviour, motivational behaviour, value, price.

Introduction. The aim of this article is general scientific analysis of the practice of econometric studies at the present stage of economic science development and substantiation of the formation of such a modern direction of economic science development as an economic metrology or a mathematical economy. The author carries out this aim by analyzing both the practice of econometric studies at the present stage of economic science development and the practice of economic measurement. The monitoring of the latter makes the author think that the general theory of economic measurement cannot be formed on the basis of establishment of so-called economic-mathematical models. It must be formed through the monitoring of economic measurement practice. The main idea of this article is to show that basic economic parameters, especially those most fundamental or primary ones like economic value and an economic price are not formed in the market though through its mechanism, but through certain metrological behaviour of business activity entities, which is based on appropriate economic behaviour and so-called motivational behaviour. During the practical implementation of such an aim the author summarizes both his own and world experience of econometric studies in order to define the most fundamental principles of forming economic parameters in the practice of business activities.

The main results of the study. They are distinguishing by the author of the article the main directions of econometric studies at the present stage of economic science development in the context of defining their advantages and disadvantages in order to justify the necessity of establishing a modern or theoretical direction of econometric science development, the result of the implementation of which would be formation of such a modern version of economics and econometric science in particular as an economic metrology.

There are three directions of this kind, let us give them a generalized description in the context of justifying the necessity of establishing such a theoretical-methodological basis of econometrics as an economic metrology.

1. The traditional direction of econometric researches.

The historical development of econometric science (econometrics in its hyper wide sense) can conditionally separate two major historical periods. Firstly, the syncretic period when econometrics developed as part of economic science in general, such as economics, which had other economic sciences, and econometric problems were treated and dealt with in the context of scientific analysis of other economic problems. We do not intend to consider this period of its development in this paper. Secondly, differentiated (separated) period of its historical formation and development, when econometric research has differentiated from other economic sciences and separated its subject as a particular part or aspect of economic science subject in general. We know that organizational and methodological establishing of econometrics as a special economic science took place in the early twentieth century. Major works of Ragnar Frisch and Jan Tinbergen came out into the world. In broad (or hyper-wide) value this research examines the quantitative relationships in the development of the economic structure of society, or even in its broader sense it is a science of principles, techniques, methods of quantitative analysis in economics. This second period of its development is of interest to the author of this work. In modern development

of econometric science we can identify three areas, the practical realization of each of which ultimately contributed to the establishment and further development of the appropriate version, or variant, of econometrics in its broadest sense (fig. 1).

The first is a traditional direction, in which was formed econometrics in its traditional sense, i.e. as the science of study of the empirical relationships between economic parameters (exactly the same this science was qualified by its founders – Robert J. Frisch and Tinbergen). This version or the option of econometric science can be described as empirical econometrics, as such quantitative analysis of economy which is not seeking to investigate the specificity of metrological behavior of businesses and on this basis to identify the fundamental principles of formation and change of economic parameters.
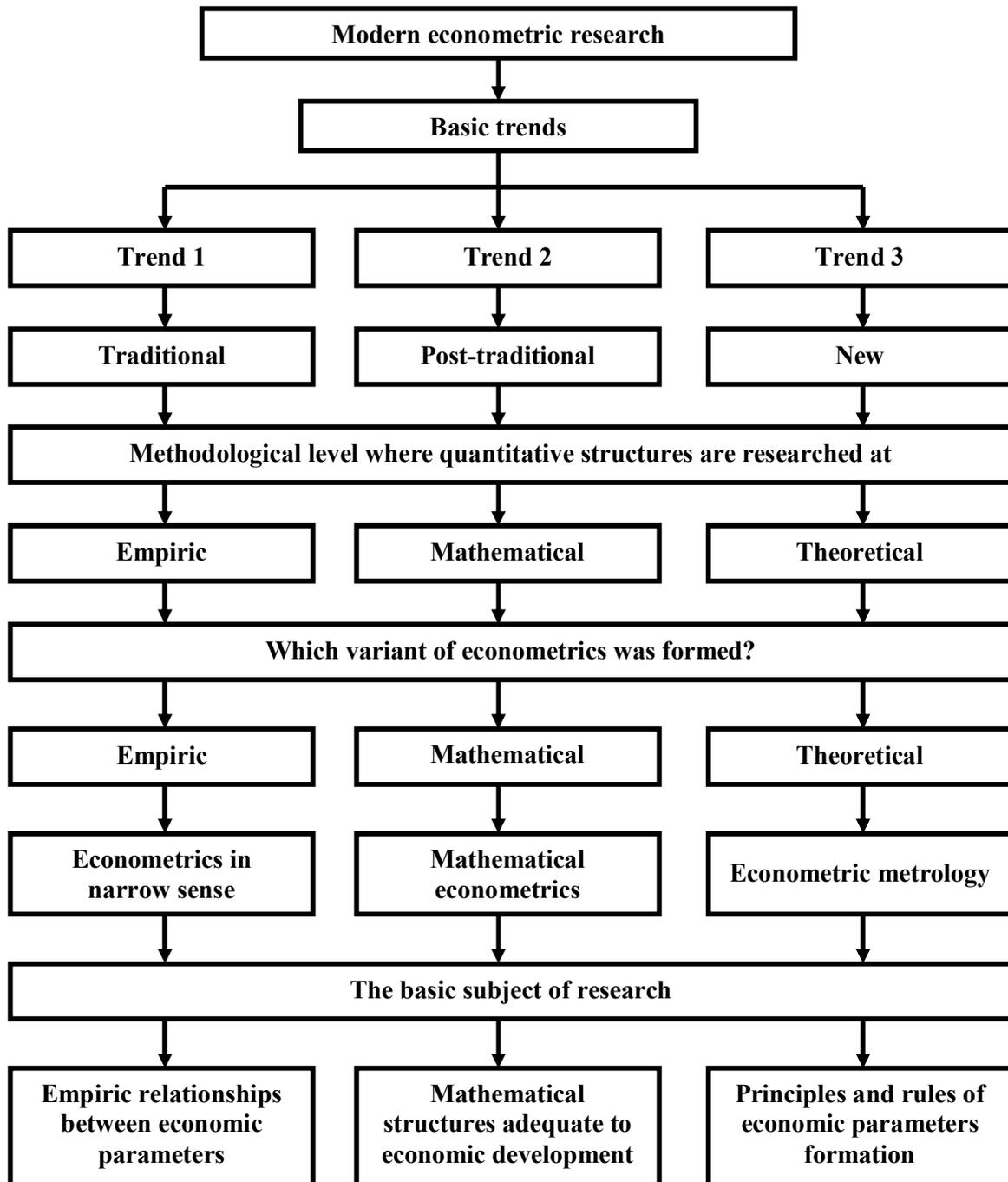

Fig. 1. Basic trends of modern econometric research

Traditional economists, in the early twentieth century, and today, at the beginning of the XXI century, understand econometrics in its narrow sense as a science of the empirical relationships between certain economic parameters. This traditional direction of econometrics has significant practical value and we do not deny its role in the development of econometric science and economic science in general. However, its main drawback is that quantitative analysis of the practices of economic measurement and management practices generally were replaced by the analysis of economic and mathematical models that are not always (and practically – rarely) an adequate reflection of the peculiarities of development and functioning of economic systems. Traditional econometrics (in our interpretation – empirical econometrics) reached a deadlock: today it is actively engaged in finding ways to accurately solve economic and mathematical equations (models), forgetting (most likely deliberately or unconsciously, as evidenced by our analysis of the practice of traditional econometric studies) that this "game of precision", loses any sense when the model itself is an inaccurate reflection of economic reality. Furthermore, the exact solution (the most accurate possible) of economic-mathematical functions is always accompanied by the formation of metrological costs (the term was first used in the econometric analysis in our previous works). Sometimes these metrological costs may be more than economic benefit we receive at the exact solution of certain economic and mathematical functions. "Academic game" in the accuracy of solving economic and mathematical equations only has a certain meaning to the "point" of metrological balance (the term also belongs to us – G.B.) of the system, to which the economic benefit from the degree of accuracy of economic "solutions" still exceeds metrological reference costs or losses, or more precisely, the "imaginary" reference costs (such as uncollected revenue or product that is formed when some of the economic cost or economic resources are directed for metrological purposes).

Post-traditional direction of econometric researches. The second is the post-traditional (in our terminology) direction of econometrics, when very some mathematical structures are actively developed to provide an adequate reflection of the real practice of management. This trend began to develop actively especially in the second third of the twentieth century, and retains some influence on the development of econometric science today, at the beginning of the XXI century. Alternative econometric investigation was launched by the representatives of mathematical sciences, selecting the real economy, the real practice of management as the object of analysis on one reason or another. During the practical implementation of the second, purely mathematical, econometric direction of science gradually formed such its version, or variant, as mathematical economy. Significant contribution to the development of mathematical economy made famous Soviet scientists – L.V. Kantorovich, V.V. Novozhilov, V.S. Nemchynov and others. If traditional econometrics kept to the economic reality and it formed the basis of certain economic-mathematical equation or function, the representatives of post-traditional (mathematical) direction of econometrics clearly gravitated to the analysis of abstract mathematical structures that allegedly have some relevance to the economy and economic development. Econometrics in the form of mathematical economy diverged more far from their own economy. Economic-mathematical analysis of economic and mathematical models has been completely replaced by mathematical analysis. As a result econometrics gradually began to become part of mathematical science. This only by the initial idea was mathematical economics, and essentially or actually it transformed into economical mathematics as a specific part of mathematical science.

In this form of economic mathematics econometrics of post-traditional trend is growing today. This specific method of mathematics found a good niche for its mathematical research, and gradually in the following research the matter ceased to play a significant role, went to the back, or even was excluded from econometric analysis. Scientific studies of this type is difficult to identify at least as economic or econometric, it performs as purely mathematical, and economics "exists" in the names of sections or paragraphs. In the middle (especially in the second third) of the twentieth century due to excessive mathematization of economic studies,

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degeneration of econometric science began, it partly maintained its metrological nature, but has ceased to be economic science. Degeneration of econometrics in a broad sense was particularly noticeable in the second half of the twentieth century. As a result there was a substitution of an object of research – economics was not subjected to quantitative analysis, it began to dominate and completely diverged from the economic matter. Guided by good intentions and trying to improve the accuracy of economic analysis, economists, mathematicians gradually "lost" in their research the economic matter. This approach to econometric research of economists was for a math mostly favorable, as they more or less possessed the techniques of mathematical analysis, but did not understand the economy, the objective economic development. They thought that mathematics in the economy is omnipotent and that it can improve the accuracy of economic research. Thus they, consciously or unconsciously, omitted the obvious truth that the problem of accuracy – is the problem of the historical development of the economy, rather than the intensity of the use of mathematical tools in it. The very objective economic development provides an objective transition from inaccuracies to the exact (or more accurately) economic measurement, so the problem must first address the accuracy of the historical economic material and then use mathematical tools.

Moreover, as we have repeatedly pointed, the fact that most practice of management imposes certain restrictions on the extent or intensity of use of mathematics in economics. Used mathematical apparatus should not be complicated and should be accompanied by large econometric costs. Once these econometric costs (costs associated with construction and solution of certain economic and mathematical functions or equations) are greater than the economic benefit we get, say, by increasing the accuracy of certain economic decisions, immediately the practice of management through the criterion of economic benefit, which it always and consistently guided in its development or operation, "rejects" this too complicated mathematical apparatus. It alone (without participation of economists, mathematicians) is the "filter" that can not allow to raise the level of complexity. This objective fact is not understood by the majority of economists, mathematicians,

especially representatives of the mathematical direction of econometrics. They think that the more complex mathematical apparatus they use, the better. Perhaps better, but less profitable (in many cases) for the practice of management. It never wanted to use too difficult mathematical algorithms, solving certain economic problems because it can significantly and adversely affect the economic benefit. Economic benefit is not only a major motivation for economic activities of the economy, but some "mathematical filter". Some of the recommendations of economists, mathematicians look stupid, not because they are mathematically incorrect, but because economically unprofitable (in the process of practical implementation metrological costs far exceed the economic benefit, which potentially can be received).

The overall conclusion is as follows. Objective economic development imposes restrictions on the use of mathematical tools. And, secondly, its use should be based on a preliminary study of the principles of objective economic parameters, their formation, which uses real practice of management, rather than that which we find in the mathematical analysis of economic and mathematical models or functions. Whatever complex and perfect mathematical device is used in the econometric analysis, its value will be small if the initial conditions for the construction of economic and mathematical models are inaccurate or incorrect. Realization of those objective circumstances forces us to conclude the necessity of becoming of new trend in the development of econometric science, which we flagged as theoretical.

The modern direction of econometric researches. This theoretical (recent) trend of econometrics in a broad sense began to emerge only in the last third of the twentieth century. Near its origins were known Soviet economists, mathematicians L.V. Kantorovich, V.V. Novozhilov, V.S. Nemchynov and other representatives of the Central Economics and Mathematics Institute, USSR Academy of Sciences. But really this trend began to emerge after their deaths, and gradually became known as "economic metrology". The subject of this latest version, or variant of econometrics is to study the principles, rules and algorithms for formation and change of economic parameters. This is so to speak, purely theoretical part of econometrics in a broad sense (in the broadest sense, this research covers

econometrics in its empirical sense, mathematical economy, or economic mathematics, and actual economic metrology or econometrics in its theoretical meaning).The necessity of its formation and development was substantiated by the author of this book back in the 80 years of the twentieth century. The necessity of its formation was justified in his doctoral dissertation "Economic measurement: the politico-economic problems of the general theory", where first the need to develop the theoretical foundations of econometrics occurred objectively, and without it the constructive development of this science is impossible, and its rebirth in mathematics or its part will further increase. The author of the book made a significant contribution to the development of theoretical foundations of econometrics, focused attention on the fact that it is high time to face the actual practice of economic measurement and look for new principles and approaches to various economic parameters.

In our works with Professor I.M. Kopych gradually appeared understanding of metrology as a specific qualitative theory of quantitative analysis in economics as the theory, the direct object of study are not certain economic and mathematical models but real practice of economic measurement, real metrological behavior of entities. There we should seek "answers" on what rules or principles certain parameters are derived. Such a turn in the practice of econometric research in the direction of management practices is extremely important, for its successful implementation basic knowledge of mathematics is not enough, one should feel the actual practice of management, real "pulse" of economic development, with the transition to a deeper theoretical research in econometrics era "of mathematical speculation" expires. At the forefront is the ability to deeply "feel" metrological behavior of entities, see in it certain principles or approaches to economic variables. Metrology should develop economically, based on a broad combination or synthesis of mathematical methods (in general) with historical approach. Since in an objective history of the practice of management (and practice of economic measurement) we should seek answers to the nature of economic transformation processes that ultimately contribute to the real degree of accuracy the process of economic measurement. In this study we attempted to practically implement

the synthesis of historical and mathematical approaches to econometric research.

Conclusions. On the basis of generalization of the practice of econometric studies at the present stage of economic science development the author of this article reaches the conclusion that econometrics has failed to evolve in the theory of economic measurement, as it was "intended" initially by its "founders" – Pavlo Tsiompa, Ragnar Frisch and Jan Tinbergen. And not only the practice of economic measurement could not become such a theory, but also the science of "econometrics", which avoided in its development such a problem as scientific monitoring of economic measurement practice, metrological behaviour of economic activity entities. Key economic parameters, as the author of this article sums up, are formed not "in the market" (although with the help of it or through its mechanism), and not through the mediation of so-called economic-mathematical models (although through them as well, but not in the first place and only indirectly) but through appropriate metrological behaviour of business activity entities, based on appropriate economic behaviour and, in particular or especially, motivational behaviour. The latter, like metrological behaviour in general, is determined by capital scales in the "environment" of which a certain economic firm is formed and develops. These scales, as is proved by the author of the article, are the very factor, strictly an economic factor, which determines the "volume" (determines through subjective metrological performance of business activity entities, not by itself) both of the main "ekonometer", the functions of which are fulfilled by money, and such basic economic parameters as economic value and an economic price.

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TENDENCIES IN DEVELOPING UNIVERSITY RANKINGS AND THE WAYS OF IMPROVING THEM

Ó Zahorodniy A. G., Pylypenko L. M., Tyvonchuk O. I., 2014

Abstract. The article is devoted to university rankings: the problems of their development, the real results of their use based on the role they fulfil in modern society. The university rankings classification according to the level of coverage of universities (international global, international regional, national, intra-university rankings), the target groups of users (rankings for applicants, for employers, for investors and financial donors, for society, general rankings), the methodology of compiling (rankings based on objective indicators, on peer reviews, mixed rankings) is developed. It is emphasized that the objectivity of university ranking depends largely on its methodology that above all covers its philosophy and methods of preparing. Philosophy of university ranking reflects its main idea, the purpose and the objectives of compiling, target audience, and the principles of formation. The methods of preparing comprise evaluation indicators, methods of their weighting (weight ratio), methods of surveys and experts selection, data sources for indicators assessment, verification of ranking results, ways and means of their publication, etc.

Key words: globalization, university rankings, Higher Education Institutions, quality evaluation tools,

Problem statement. Globalization of the educational environment and the educational services market caused the development of tools for assessing the quality of such services by both their direct consumers and the employers. University rankings are one of indirect but most common and most accessible to the public tools of education services quality evaluation in the system of higher education.

At present, a large number of university rankings are compiled at the national levels of individual countries, at the regional levels (Europe, America, Asia etc.), and also on a global (worldwide) scale. Obviously, different rankings present different information about the position of particular universities, and this fact, on the one hand, complicates the evaluation of the quality of their educational services in the process of decision-making by the users of such rankings, and, on the other hand, causes discontent among the members of the university academic communities concerning the position of their universities in these rankings. Taking into account that the authorities of Higher Education Institutions (hereinafter – HEIs) and the society in general consider university rankings primarily in the marketing aspect, every publication of any ranking is usually accompanied by considerable criticism. Especially severe is the criticism of the international university rankings due to the fact that globalization of the world economy makes the market of educational services extremely competitive.

Analysis of recent research and publications. Despite the criticism, there is quite a number scientific works and publications devoted to university rankings, especially international ones, that present the results work of independent expert or intergovernmental organizations. Some of them deal exceptionally with HEIs rankings (e.g. IREG), while others highlight the field of higher education in general. The scientific papers generally reflect the comparison of different rankings according to their results, the methods of compiling or directly according to the indicators formed by these methods [1, 2]; analysis of statistical parameters of individual rankings, including those that characterize the laws of rankings indicators distribution [3]; specific measures for improving the position of universities in rankings [4]; the role of university rankings as tools of transparency that indirectly characterize the quality of educational services [5] etc.

The criticism of international university ranking systems has led to creation of an International Ranking Expert Group (IREG), whose mission is to develop principles of rankings

formation, which would provide an objective evaluation of universities' performance [6]. However, criticism and dissatisfaction with the results of rankings are still continuing. In our opinion, this is caused by the lack of proper understanding of the role and purpose of the university rankings both by their users and by their compilers. Thus, **the aim of this research** is to study the trends in developing university rankings as to the correspondence of the purpose of their compiling to the results of their actual use with the account of the role assigned to them in the modern society.

Material presentation. The purpose of compiling HEIs rankings, as one of the tools of educational environment transparency, is to provide users with the information necessary for:

– choosing HEIs for entrance by applicants;

– selecting specialists by employers;

– allocating funds for higher education financing by the state, local communities, NGOs or charities, businesses etc.;

– determining directions of HEIs development and so on.

It is clear, that such a multidimensional purpose of these ratings as well as the fact of their being intended for different target user groups cannot be objectively achieved by one ranking of universities. This explains the existence of many rankings that may have different purpose and target direction. In general, university rankings can be classified in many ways (Fig. 1).
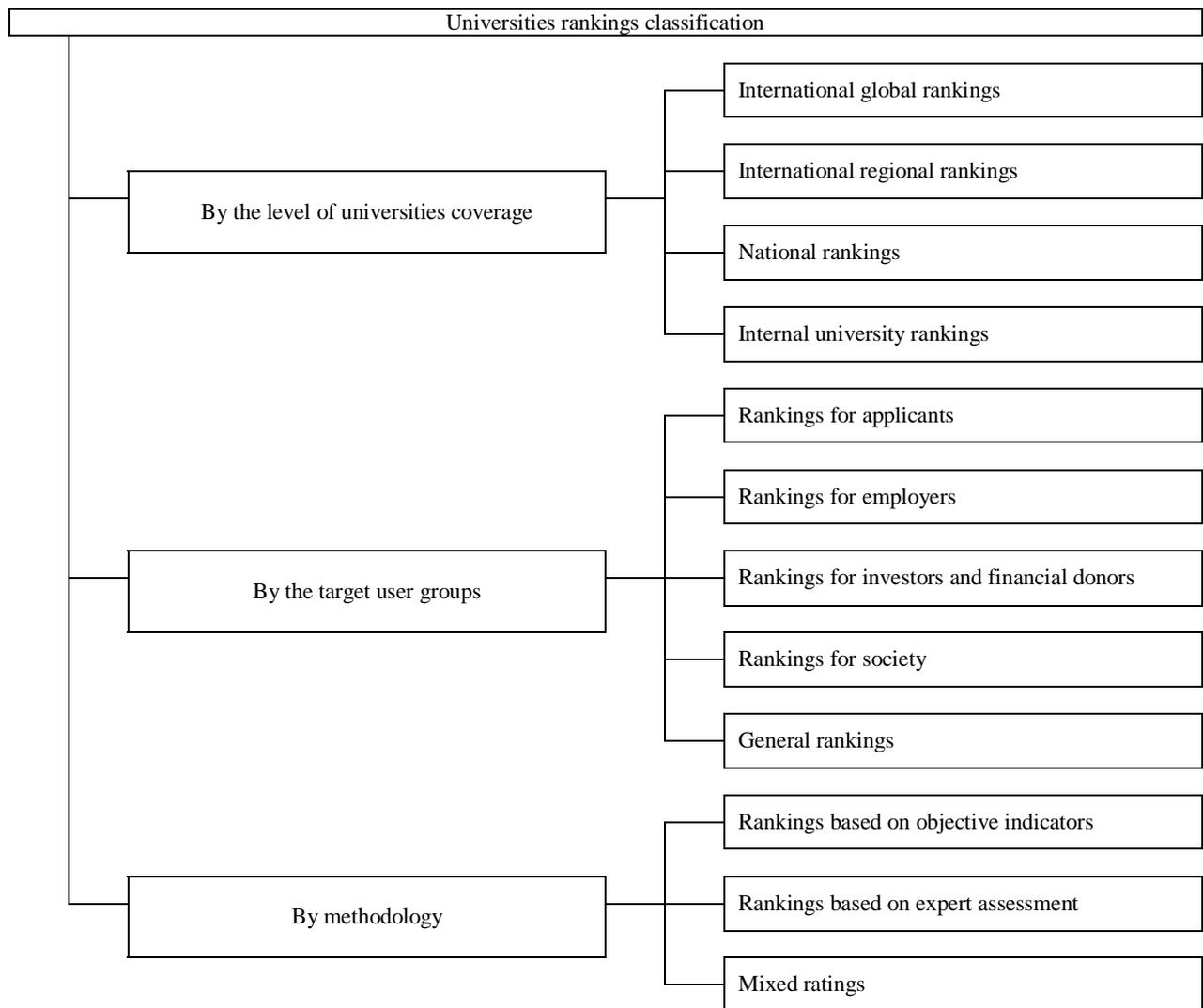

Fig. 1. Classification of universities rankings

According to the level of universities coverage by ranking, four types of rankings can be distinguished:

– international rankings of universities covering the global space of higher education. The most popular global rankings of universities are: The Academic Ranking of World Universities (ARWU/ Shanghai ranking) compiled by Jiao Tong University; the rankings published by the British magazine Times Higher Education (THE) – THE World University Rankings; the rankings published by the company British Quacquarelli Symonds (QS) – QS World University Rankings; Webometrics Ranking of World Universities, also known as Ranking Web of World Universities published by the Cybermetrics Lab, a research group of the Spanish National Research Council (CSIC) located in Madrid [7, 8, 9, 10];

– international regional rankings which rank universities of a particular geographic area, usually a continent. Sometimes regional universities rankings are formed by the compilers of global rankings. Thus, British Quacquarelli Symonds but for "QS World University Rankings" also compiles some regional universities rankings: "QS University Rankings: Asia", "QS University Rankings: Latin America", "QS University Rankings: BRICS" (a dedicated ranking of the top 100 universities in the BRICS countries (Brazil, Russia, India, China and South Africa) etc. [9];

– national rankings of universities that embrace the higher education environment of a particular country. In Ukraine, such rankings are HEIs rankings that is formed under the auspices of the Ministry of Education and Science of Ukraine as well as "Compass" and "Top 200 Ukraine" rankings [11, 12, 13];

– internal university rankings that assess the state or activities of one university. For example, in the system of quality management of Lviv Polytechnic National University the departments and academic staff are annually ranked, and every semester students rankings are calculated [14].

International and national rankings can also include rankings by the subject or industry criterion, for example, rankings of technical universities or rankings of medical universities, as well as rankings on the basis of a certain status, for example, rankings of research universities and so on.

By the target user groups the universities rankings can be compiled for employers, students, financial donors etc. There are also general rankings that are not targeting any particular social user group. Most HEIs rankings are perceived by the public as general, although some of them are designed for a specific group of users. In particular, the global ranking "QS World University Rankings" is aimed primarily at meeting the information needs of applicants; national ranking "Compass" has been initiated as a survey of employers (although today its methodology involves also surveys of alumni, but the subject of ranking is still the assessment of the practical value of acquired knowledge and job prospects); the primary task of the Shanghai ranking (it was first published in 2003) was to show lagging of Chinese universities from the world leading universities, so its main user was the Chinese government that had to take certain measures to improve the quality of higher education in this country, this being the evidence of the fact that the Shanghai ranking is first of all intended for financial donors.

Although the mentioned above rankings have target orientation, they are perceived by the public as general, which, in our opinion, is one of the reasons for their criticism. The narrow purpose of rankings allows to concentrate its methodology more thoroughly on the necessary aspects of the university's performance and to choose the right indicators that will help to increase the objectivity of evaluation results. However, in this case the other, equally important, aspects of university performance are neglected. For example, rankings focused on the employers pay little attention to the social conditions of training, students' accommodation, scientific research etc. For the target group of universities ranking users such aspects of university activities may be indeed unimportant, but often rankings are published for the wide audience, not only for the target user group. Meanwhile, other users who are not the part of the rankings' target groups while evaluating the results do not always take into account that rankings might have inherent drawbacks and limitations.

UNIVERSITY RANKINGS METHODOLOGY

Philosophy of university rankings
- idea;
- purpose, objectives and target audience;
- principles of compiling.

University rankings procedure
- evaluation indicators;
- methods of indicators weighing (weight ratio);
- methods of surveys and experts selection;
- data sources;
- verification of results;
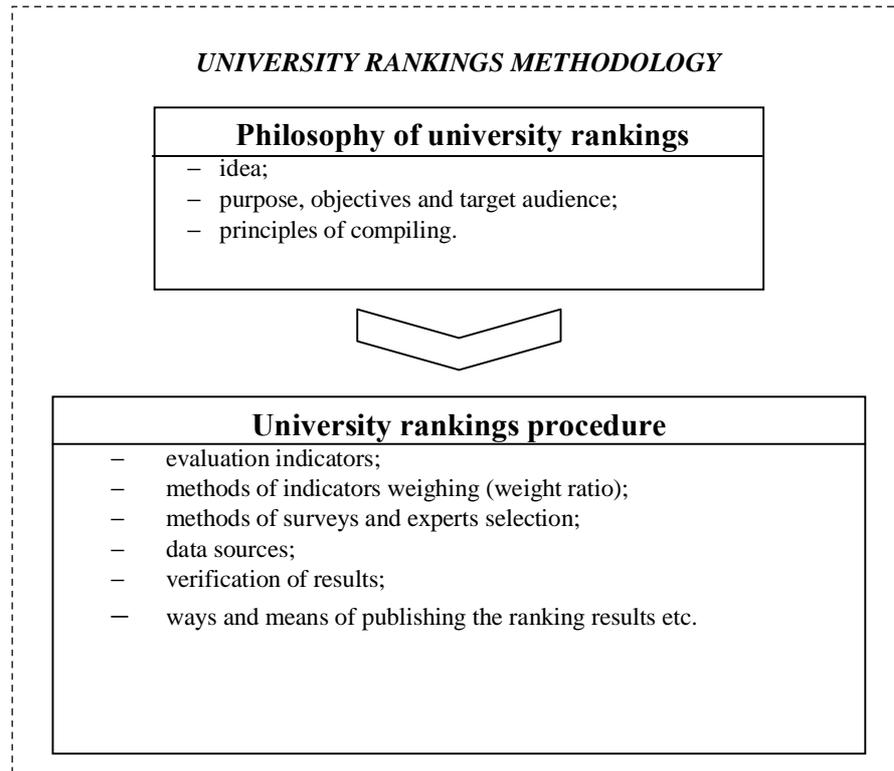- ways and means of publishing the ranking results etc.

Fig. 2. Formation of universities rankings methodology.

Therefore, the objectivity of HEIs ranking depends largely on its methodology that above all covers its philosophy and methods of compilation (Fig. 2). Philosophy of universities ranking reflects its main idea, the purpose and the objectives of compiling, target audience, and the principles of formation. These concept components of rankings philosophy are actually the factors that determine the essence of compiling procedure, that is: evaluation indicators, methods of their weighing (weight ratio), methods of surveys and experts selection, data sources for indicators assessment, verification of ranking results, ways and means of their publication etc.

University rankings methodology can be based both on objective indicators, with quantitative measurement, and expert assessments. The use of expert assessments, according to some critics, reduces the objectivity of rankings. However, it is impossible to compile a ranking without any experts at all, even if such a ranking is based only on objective indicators, because expert judgments are necessary for selecting indicators, defining criteria of their weighing, and eventually, the selection of experts itself is based on certain expert judgment. Therefore, most university rankings are mixed.

The change of the type of economic system in the leading developed countries of the world, in particular, the formation of intellectual and innovative economies (knowledge economies), which finally determines the trends of global economy as well has led to the focusing of university rankings (especially international) on their research potential. Thus, just the research universities occupy first positions in the leading international universities rankings (Table 1).

However, excessive focusing of international university rankings on universities' research capacity has caused sharp criticism of these rankings by the authorities of universities (usually of those that are not research universities or cannot reach a high position in rankings), and also by the scientists and experts. In particular, the Shanghai ranking is criticized for taking into account the number of alumni and staff of institutions winning Nobel Prizes and Fields Medals that meet the philosophy of this ranking, aimed at forming "a standard" of the world-class university. It is just this indicator that became almost the main reason for criticizing the Shanghai ranking, due to at least two reasons:

Table 1

Extract from the leading international universities rankings in 2013 [7, 8, 9]

Number of position in the ranking	Academic Ranking of World Universities	QS World University Rankings	Times Higher Education World University Rankings
1	Harvard University	Massachusetts Institute of Technology	California Institute of Technology (Caltech)
2	Stanford University	Harvard University	University of Oxford
3	University of California, Berkeley	University of Cambridge	Harvard University
4	Massachusetts Institute of Technology (MIT)	University College London	Stanford University
5	University of Cambridge	Imperial College London	Massachusetts Institute of Technology (MIT)
6	California Institute of Technology	University of Oxford	Princeton University
7	Princeton University	Stanford University	University of Cambridge
8	Columbia University	Yale University	University of California, Berkeley
9	University of Chicago	University of Chicago	University of Chicago
10	University of Oxford	California Institute of Technology	Imperial College London
11	Yale University	Princeton University	Yale University
12	University of California, Los Angeles	Swiss Federal Institute of Technology in Zurich (ETH Zurich)	University of California, Los Angeles (UCLA)
13	Cornell University	University of Pennsylvania	Columbia University
14	University of California, San Diego	Columbia University	ETH Zürich – Swiss Federal Institute of Technology Zürich
15	University of Pennsylvania	Cornell University	Johns Hopkins University
16	University of Washington	Johns Hopkins University	University of Pennsylvania
17	The Johns Hopkins University	University of Edinburgh	Duke University
18	University of California, San Francisco	University of Toronto	University of Michigan
19	University of Wisconsin – Madison	Swiss Federal Institute of Technology in Lausanne (EPFL)	Cornell University
20	Swiss Federal Institute of Technology Zurich	King's College London	University of Toronto

1) there are objectively not enough Nobel Prizes and Fields Medals for all universities, considering ratio between the number of such laureates and the number of universities;

2) according to American experts, implicit knowledge that cannot be presented verbally, but becomes explicit only in the context of its application, plays much more significant role in the development of innovative capacity [15, p. 57-58]. It is the ability to accumulate and transfer to students this implicit knowledge that determines the research capacity of the university, whereas the presence in university research and teaching staff or among its alumni one or more Nobel Prizes and Fields Medals winners does not indicate the achievement of this task.

Moreover, the activities of universities as social institutions should be directed at fulfilling socially important objectives, among which the central place belongs to the formation of an educated person as a bearer of knowledge and a subject of its reproduction. The universities focusing on research capacity promotes the development of "academic capitalism", i.e.

commercialization of research, venture business that finally undermines the fundamental scientific values [15, c.56-60]. Nevertheless, the main activity of universities is education, but in HEIs rankings, according to many experts, this function is not sufficiently reflected.

On the other hand, the international rankings are criticized for mainly advertising and marketing approach to the selection of their indicators that are largely designed to meet the information demands of potential consumers of educational services – applicants [16, 17]. However, in marketing of educational services, due to their social implication, it is impossible, as in other areas of economic activity, to be focused only on the consumer.

Conclusions. Publication of successive national, regional or international universities rankings, particularly on the eve of the HEIs entrance campaigns, usually attracts wide public attention. As the public perceives universities rankings as a kind of advertising and marketing, the authorities of HEIs and their academic communities are periodically involuntarily involved into the public debate on the quality of the educational services provided by a certain HEI that is based on rankings as indirect assessments. However, those who use rankings do not always correctly and adequately perceive their results regarding the purpose of the rankings formation. Each part of the society perceives rankings primarily in terms of their own information requests. Demand always causes supply, therefore, in our opinion, we will observe in the future the tendency of further "specialization" of university rankings following the public demand, with the simultaneous increase of the role of the global rankings that will establish the standards of universities and will serve as a benchmark for the development of universities' activities. Herewith, taking into account the innovative and intellectual nature of the global economy, it is the research capacity of universities that should be one of the major factors in selecting indicators for forming university rankings, though not at the expense of the universities educational activities that are considered by the society to be fundamental university activities.

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IMPLEMENTATION OF MARKETING CONCEPTS INTO SUPPLY CHAIN MANAGEMENT

Ó Krykavskyy E. V., Pokhylchenko E. A., 2014

Abstract. The integration of strategic marketing approaches, particularly, in the sales unit of the supply chain, into other functional areas such as logistics and finance, in order to minimize target conflicts and achieve competitive advantages is substantiated in the article. The use of marketing – logistics approach to supply chain management is actualized. A critical review of modern marketing concepts is presented. The necessity of integrating the concept of Supply Chain Management, on the one hand, with the concept of Customer Relationship Management, which will facilitate interconnection of financial, marketing and logistics purposes and will help to move away from the traditional dilemma "elasticity contra efficiency", and, on the other hand, with the concept of Supplier relationship management, which will control the entire supply cycle from the strategic planning to the end user sale is substantiated. The effect of such integration on the key processes and the management effectiveness indicators of the total supply chain is identified.

Keywords: supply chain, integration of logistics, finance and marketing, relationship marketing, experience marketing, CSR, CRM, SCM.

Problem statement. The radical changes taking place in the crisis and post-crisis periods in many economies of the world provide possibilities to verify certain paradigms, hypotheses, concepts, principles, and other components of the economic science theory. This particularly applies to the marketing theory, since there is some controversy (disputable issues) concerning the following: interpretation of marketing as not only the operational and tactical but also as a strategic function; the hierarchy of relationships between marketing functions and other functions of traditional and "advanced" businesses (supply chain); substitution of value created by marketing and other functions of the company; holistic nature (integrity), consequency (sequence, logic), compatibility (consistency) and complementarity of marketing in conditions of applying integrated supply chain solutions. This controversy is not unreasonable as there are examples of viability of businesses and some global organizations despite the double decline in production as it happens in Tychy, Poland Republic (Fiat Auto Poland): more than 600,000 cars produced in 2009 and less than 300,000 cars in 2013. Is it elasticity for efficiency trade-off or trade-up?

Another equally important aspect of the controversy is the recognition of the trend to increase the share of the value created outside organizations (by suppliers) as a positive paradigm, not taking into account the growing mass withdrawal, for example, of cars from the market in order to eliminate defects (constructional, techno-logical). Of course, as cars are directly associated with the safety of people, the costs of eliminating defects are not much discussed, but the effectiveness of such type of the reverse supply chain is significantly lower than that of the direct supply chain.

One more theoretical problem that needs to be verified to avoid controversy is a need for justification of the so called "middle ground" between specialization (effort division) and integration ("joint efforts"), between freedom and dependence in decision-making, between confrontation and cooperation, between trust and control, between internal and external outcomes (effects) etc.

However, by axiomatically accepting the progressive trends in the formation and development of the product supply chains as positive, we have to recognize the existence of a range of problems in the theory and practice of marketing in their environment, particularly, in the lower part of the supply chain – that of distribution.

Analysis of the recent research and publications enables us to state that:

1. Strategic aspects of marketing are the subject of research of many foreign and Ukrainian

scientists. In general, a number of scientists – F. Kotler, P. Garkavenko, P.Druker, P. Doyle define marketing strategies as the most important factor for the enterprise long-term development, considering that the strategy of distribution channels is a priority that will further determine the stability and efficiency of the enterprise [1, 2, 3, 4]. Thus, P. Doyle notes that the "strategy of marketing channels is the most important factor determining long-term prospects of the company." P. Drucker believes that in the 21 st century the major changes should be expected not in the production or consumption of goods, but in the distribution channels. However, in the works of these scholars the focus is made on the process of formation of marketing strategies without regard of their integration into the overall strategy of the company or, for example, into its financial or logistic strategy. To some extent neglected are also the aspects connected with solving conflicts between the goals of marketing and the goals of the enterprise as a whole, or the goals of the enterprise's other business areas, such as finance, production, and logistics, in particular.

2. Recently there have been observed an active generation and dissemination of new ideas and concepts in the theory and practice of marketing such as "relationship marketing", "expertise marketing", and "value marketing". However, there is a lack of research on linking these concepts to supply chain management and their role in the marketing strategy.

So, in the theory and practice of marketing there are still many issues to be researched concerning application of these concepts in the supply chain management.

Research objectives. 1. To investigate and justify the need of integration of strategic marketing approaches, particularly in the sales unit of the supply chain, with those of other functional areas: logistics and finances. 2. To investigate and justify the use of the partnership marketing technology in establishing effective cooperation and high coherence between all links of the supply chain.

Research materials. Transforming logistics thinking into system categories and expanding the limits of logistic cooperation led to the evolution of the concept of logistics into the supply chain management concept. The supply chain is based on the integration of the production enterprise activities with its suppliers, distributors, logisticians, and consumers. In other words, legally independent organizations work together to achieve common goals such as economies of scale, profits increase, strategic risk limitation, competitive advantage, customer service improvement. The benefits accompanying such integration also are: production operation time reduction, labor division improvement, possibility of choosing a convenient form of cooperation and so on. Building the effective supply chains and thus achieving the potential benefits of such a business model are guaranteed by cooperation in the fields of logistics, marketing, information technology, and finance. This cooperation helps to jointly overcome time, space, assortment, quantity and other barriers on the way of moving goods from the raw materials sources to the end users, to avoid the processes and procedures that have no value, reduce response time to changes in the market demand. However, it's not easy to achieve such cooperation and high coherence of all links in the chain. The experience of the global automotive companies, including the aforementioned Fiat Auto Poland, shows that it is possible to achieve very high levels of cost control in production, to minimize time, and the amount of reserves due to high level of specialization and the use of modern logistics tools, but it is extremely difficult to achieve the same results in sales of products. Usually, it is in the field of distribution that the achieved positive effect of "the total cost savings" in production is "dispersed". A possible way to solve this problem is to intensify research, especially in "non-material", or non-production sphere of supply chain, namely, in the field of relations where strategic marketing approaches acquire key importance, particularly, in the sales unit of the supply chain, and their integration with other functional areas such as logistics and finances.

Let us assume as a paradigm that the formation of the company's marketing strategy or the supply chain should be, firstly, completely dependent on the current general strategy and / or on the strategy of strategic business units; secondly, in strict consequence to implementation of the stages of the strategic management process,

in which strategy formulation is only one of the stages, preceded by the strategic analysis, followed by the implementation of strategies and evaluation and control of the strategy implementation; thirdly, in the dynamic compatibility with the accepted mission, goals and strategic decisions (plans, programs, objectives etc.) [5].

Under the strategy of sales activities, in our opinion, one should understand the process of long-term planning and organization of marketing activities that allows to successfully implement the task of choosing a distribution channel, its length and breadth, and to mutually agree needs of consumers with financial capabilities of the enterprise [5].

The strategy of sales activities should identify [6, p. 27–28]:

– types of intermediaries and their role in the final levels of the supply chain;

– level of the sales selectivity;

– possibility of wholesale and retail trade;

– need for after-sales services;

– optimal structure of the distribution methods and channels;

– structure of the price for the end-user (consumer);

– direction of marketing communication [5].

The processes of integrating marketing, logistics and finance that form the interaction of the three management concepts become extremely important for building effective supply chains. The interaction of marketing as the market-oriented management concept and logistics as the stream-oriented management concept, makes it possible to raise the material and information utility and value of the product assessed by customers or clients; and their joint interaction with the concept of profitability, forms the basis for maintaining the benefits of exchange and for ensuring expanded reproduction at all levels of the supply chain [5].

So, the optimal strategy for sales activities should be based on the interaction of marketing, logistics and finance to minimize conflicts of goals that arise between these functions in practice. The main goals of the sales system should be:

→ in terms of finances – to increase profitability and the profit ratio of the enterprise as a whole and its individual products on the basis of mutually beneficial exchange (using DuPont

model). In particular, on the basis of a simple model of supply chain "supplier – producer – consumer" in which there is one producer that serves a number of users (for example, a manufacturer of cars and trucks), one can talk about several dimensions of the chain in terms of producer (Fig.1). That is, on one hand, there is a supply chain, for instance, of trucks, production of which is served by one part of assets and this supply chain generates certain amount of profit; on the other hand, there is a supply chain of cars, production of which is served by the other part of assets and this supply chain generates the other amount of profit.

This conditional division of the supply chain of automobiles by consumer categories makes relevant the calculation of the return on equity of every of the supply chains to identify and control the factors that cause change of this indicator leading to the desired financial condition of the corresponding chain. Then, the modified three-factor Dupont model for the supply chain looks like this:

$$ROE_{SC} = \left(NP_{SC} / EC_{SC}\right) \cdot \left(As_{SC} / As_{SC}\right) \cdot \left(A_{SC} / A_{SC}\right) \cdot$$
$$\cdot \left(A_{SC} / A_{SC}\right) \cdot \left(A_{SC_n} / A_{SC_n}\right) =$$
$$\left(NP_{SC} / As_{SC}\right) \cdot \left(As_{SC} / A_{SC}\right) \cdot$$
$$\cdot \left(1/(A_{SC_n} / A_{SC})\right) \cdot \left(A_{SC_n} / AC_{SC}\right) =$$
$$= \frac{R_{\text{sales } SC} \cdot Amm.A_{SC} \cdot Fin..leverage_{SC}}{Share\ of\ assets\ of\ n-th\ SC\ in\ total\ assets\ of\ SC},$$

where ROE_{SC} – return on equity of the total supply chain; NP_{SC} – net profit of the total supply chain; As_{SC} – amount of sales of the total supply chain; A_{SC} –average annual value of assets of the total supply chain; A_{SCn} – average annual value of assets of the n-th supply chain that is part of the total supply chain; EC_{SC} – equity capital of the total supply chain. Using the modified model one can effectively manage the return on equity of the total supply chain through the targeted impact on its components.

→ in terms of marketing – maximum satisfaction of customers' needs due to the optimal assortment, setting prices and development of the effective communication policy;

→ in terms of logistics – customer service based on the physical distribution of goods in strictly specified time and place [5].
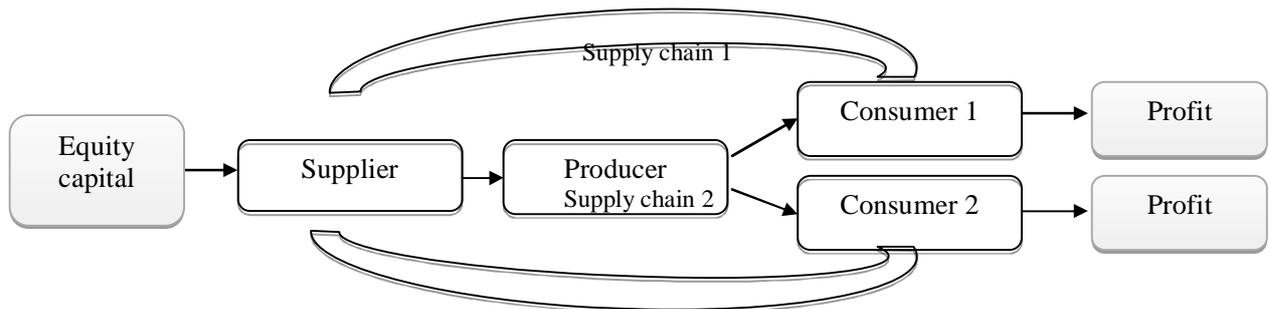
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Fig. 1. Two dimensions of the supply chain in terms of the modified Dupont model
Source: developed by the authors

Searching customers, studying customers needs and forming the marketing mix	*Preparing negotiations, discussing conditions of implementation, signing the contract*	*Implementation of the contract and delivery of goods to final consumers at a specified time*
⇩	⇩	⇩
Collaboration of marketing and logistics structures	Collaboration of marketing and financial structures	Collaboration of marketing, logistics and financial structures

Fig. 2. Collaboration of marketing, logistics and financial units of an enterprise [5]

Only with the optimal combination and mutual coordination of all the defined goals it becomes possible to minimize conflicts of interests of functional areas and departments of the enterprises participating in supply chains, and to achieve competitive advantage. The conflicts of interests between employees of marketing, logistics and finance departments are common to many enterprises. Often managers are aware of their occurance, but consider them natural and unavoidable, caused by the peculiarities of every of these functional areas. The reasons of ineffective cooperation seem so obvious that they rarely become the subject of deeper research. In this way managers neglect negative consequences caused by the lack of interaction and nobody assesses them. At the same time, it appears that the impact of the ineffective cooperation between marketing and finance departments on the situation of the enterprise is essential, and many managers simply do not realize the extent of the problem because the deterioration of the financial results or the competitive position of the enterprise is rarely associated with poor cooperation of different functional departments. In practice, the enterprise management is often not aware of the fact that conflicts between functional units can be correlated with costs increase and revenues fall, deterioration

of relationships with customers, decrease of trust to the company. Therefore, mutual participation and cooperation of financial, marketing and logistics structures in sales activities is extremely important. This applies both to the decisions made at the highest levels of management and to the control of implementation and efficiency of current measures. Remembering the importance of the above-said cooperation, in general, sales can be presented in the following way (Fig. 2) [5].

Another way of achieving effective collaboration and high coherence of all links in the supply chain is the use of a different conceptual marketing platform, namely, partnership marketing, and, in particular, such ideas as "experience marketing", "marketing of value" and their connection to supply chain management.

The concept of partnership marketing is particularly useful in the context of increasing volatility of economic conditions and competition when it becomes important to shift from fighting with competitors to building partnerships, especially with customers through personalized channels of promotion, assortment, prices and discount systems, delivery methods, and keeping loyal customers database as well as ongoing work on attracting new customers. As to supply chains, partnership

marketing concerns building partnerships not only with consumers but also with all participants of the supply chain. In this aspect it is advisable to distinguish three types of relationships:

1. Direct relationships between participants along the supply chain: with suppliers, customers and intermediaries.

2. Internal organizational relationships between employees, shareholders, company managers who are members of the supply chain.

3. Indirect "external" relations between the supply chain and the subjects of external environment (financial, banking institutions, governmental institutions, media, public organizations etc.).

The first type of relationships (also known as the relationships in the supply levels) requires the closest attention.

Beginning with 90s of the 21st century, on the background of increasing differentiation of markets, intensified competition, spread of new technology there has been observed certain evolution of views on the content of SCM (Table 1). In particular, while operational "physical" aspect of the supply chain is slightly weakened, attention is concentrated on creating the added value for the end users and this draws special attention to building relationships with them. Therefore, marketing and logistics supply chain management based on three elements: customer satisfaction, integrated logistic and marketing activity, and financial goals becomes more than ever important.

In terms of building relationships with customers in supply chains a priority attention is also paid to the use of tools of CRM (Customer Relationship Management), CSR (Corporate Social Responsibility), CCR (Customer-centric retailing), as well as to the Experiential marketing and Value-based Marketing. Let us examine them in detail.

CRM or Customer Relationship Management defines the customer as the center of the entire business philosophy, and the major activities include measures to support effective marketing, sales and customer service. Support of these business objectives includes the collection, storage and analysis of information about customers, suppliers, partners, and the internal processes of the company. At the technological level a CRM system is a set of applications, features and tools related by the single business logic and integrated into the single corporate information environment of the company. Automation of the appropriate business processes of marketing, sales and service enables the company to make the most effective offer to the "right" customer at the "right" time through the distribution channel that is most convenient for the customer.

Table 1

Differentiation of conceptual views on Supply Chain Management [7]

Features	Conceptual view			
	logistic	integrated	synchronizational	relational
Goal	Relationship between service quality and costs	Increase of value	Increase of value	Increase of relationships value and the value for the customer
Area of participants	From sources of raw materials to retail sales place	From sources of raw materials to retail sales place	From sources of raw materials to the end user	All participants are involved in creation of value
Area of flows	Flow of goods and information	Flow of goods, information and money	Flow of goods, information and money	Flow of goods and money together with a two-way flow of information
Area of cooperation	Localization, transportation, warehousing, inventory management, service quality, packaging	From demand forecasting to implementation of orders	Unlimited, from market and clients research to after-sale service	From market research, value for client / relationship through sales to increasing the value of companies

As in the previous concept, the main focus in **CCR or Customer-centric retailing** is made on customer needs but it concerns only retail sales. So, four degrees of participation in the creation of customer-centric retailing can be identified. Firstly, creating a clients' database (the initial phase – retailers are beginning to recognize the importance of general information and to use it in the sales process and in the creation of tender). Secondly, organizing the transfer and use of information about clients based on the developed criteria (type of channel, form of payment for goods etc.), demographic factors and approaches to selling. Thirdly, using information about clients as an important indicator of future sales and its integrating into further retailer activities. Fourthly, fully integrating the information about the client into the retail sales strategy. Based on this approach, decisions are made in accordance with the terms of distribution channels, brands, assortment policy. Therefore, changes are observed in the attitude to customers (on the basis of behavior models singled out in the segmentation process), methods of making decisions about the assortment (based on quantitative data about customers and their behavior patterns), method of pricing (based on a basket of needs specific to particular segments) form of promotion management, specific approach to management (goals regarding customer needs satisfaction are paramount along the supply chain, continuous re-evaluation of the customer behavior patterns is made).

Another aspect of building effective collaboration in supply chains may be application of the concept of Corporate Social Responsibility, or CSR, interpreted as: 1) business philosophy based on building stable, transparent relationships with all stakeholders, resulting in gaining the competitive advantage for companies; 2) effective management strategy at the enterprise increasing its competitiveness due to creating reputation and developing favorable conditions for socio-economic development; 3) a concept due to which companies voluntarily apply social and environmental protection measures in their strategies, activities and relations with stakeholders [8].

According to the CSR concept, an enterprise is viewed as an organization that serves the interests of a wide range of stakeholders, in whom the enterprise is interested as in its partners working with the company, creating social and economic environments. They are not only clients, but also investors, employees, suppliers, media, public administration and local public. According to the Global Compact which was announced by the UN General Secretary Kofi Annan at the World Summit in Davos (amended in 2004), the Company shall be governed by the relevant principles in the following areas:

1. Human rights;
2. Working conditions;
3. Environmental protection;
4. Avoiding corruption.

An example of a company that has implemented CSR standards is Danone in Poland. To maintain sustainable and relatively fast contact with milk suppliers the company created a website where, after registration, they can find relevant information about the quality of milk, invoices and payments. Besides, the site provides news related to the milk market, including legislation, information on the feeding of cattle and good practices in this area. The service providing necessary information facilitates the daily work of both suppliers and the company that can quickly convey important messages to particular suppliers concerning the product quality. According to the company, in 2009 the program was used by more than half of the suppliers. Another activity of the company was the program "Share a meal" aimed to fight child malnutrition in Poland, it further continuing as an information campaign on Facebook. The interest was so huge that the purpose for which the campaign was intended was reached in 4 weeks.

The main benefits that can be achieved through the implementation of CSR include, among others, improving of company's image and increasing its innovativeness. Thus, the study conducted in 2009 among the Polish companies which introduced the CSR standards, showed a correlation with the value of their intangible assets, brands. So, first prize for the value of the brand and the second for implementing CSR standards was granted to oil company Orlen [8].

The most closely associated with CSR modern marketing concept, which is gaining increasing popularity among businesses is "Value based Marketing ", the purpose of which is to build long-term customer loyalty by continuously increasing the value they receive as a result of marketing offers of the company [9]**.** F. Kotler

stresses that such marketing activities as occasional promotion events, small changes in packaging or pompous advertising can increase sales in the short term, but add less value than the real improvement in the product quality, utility and convenience could have done. This concept takes into account not only customer demands but also the demands of other entities with which the company interacts, making it particularly attractive for use in the supply chain management. The characteristics features that differentiate it from partnership marketing is a wide range of goals that go beyond just keeping customer loyal and maintaining a certain market share and are related with such categories as cost management and social responsibility. Besides, if the nature of marketing events of partnership marketing has strategic direction and is based on collaboration with clients (1x1), here everything is based on liability directed to all entities with which the company interacts. An example of a company that realizes in practice the concept of Value based Marketing is Danone in Poland [9].

Trying to establish the closest possible relationships with clients, more and more companies rely on one more marketing tool – "experiential marketing " (synonyms: marketing of impressions, empirical marketing), based on the direct involvement of clients in the process of creating a product or service that makes it possible to increase their satisfaction. As a result of the processes taking place in the modern economy and markets as well as development of the global information society, the use of new communication technologies, exchange of knowledge and creation of new solutions, consumer behavior is changing:

there arises the need and desire to participate actively in forming the offer. Involving customers in the early stages of creating innovations, for example in the form of seminars, companies have more chances in the market as they become more aware of the needs and ideas of their consumers.

The empirical marketing is a way to attract the attention of consumers to a particular product that allows them to "feel" the product, using as many senses as possible. Due to innovative approaches used to attract customers' attention and direct "plunging" into the world of a product (trademark, brand), customers: firstly, better remember information about the product (trademark, brand) thanks to the received impressions; secondly, begin to identify the product (TM, brand) with the pleasant emotions which they received during the event; thirdly, better perceive what manufacturer offers unobtrusively (there arises a feeling of one's own choice); fourthly, due to the emotional involvement the received positive effect lasts longer; fifthly, the positive emotions received cause full product (trademark, brand) loyalty, and, as a result, companies achieve their business goals.

Thus, there is a wide range of techniques and methods that allow developing effective contacts in the supply chain, including its direct relationship with consumers. However, in our opinion, not each of the concepts analyzed above can be successfully implemented into the concept of supply chain in the context of possible ways of achieving desired integration of three functional areas: marketing, logistics and finance as a prerequisite of overcoming / minimizing target conflicts (Table 2).

Table 2

Differentiation of modern marketing concepts and theories

Concepts / technologies	Direction	Main benefits
Partnership marketing concept	strategic	social, marketing
Customer Relationship Management concept (CRM)	strategic	economic, social, marketing
Customer-centric retailing (CCR)	operational	marketing
Corporate Social Responsibility (CSR)	strategic	economic, social
Value-based marketing concept	operational / partly strategic	economic, social, marketing
Experiential marketing technology	operational	social, marketing

Source: developed by the authors
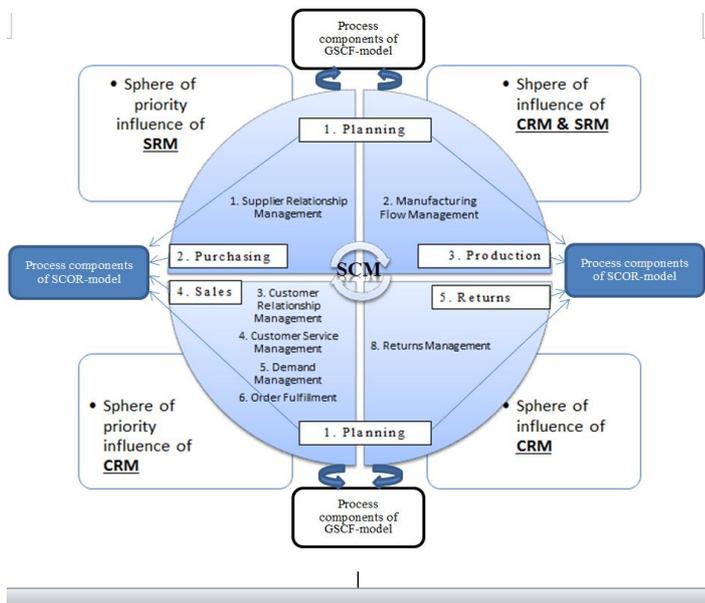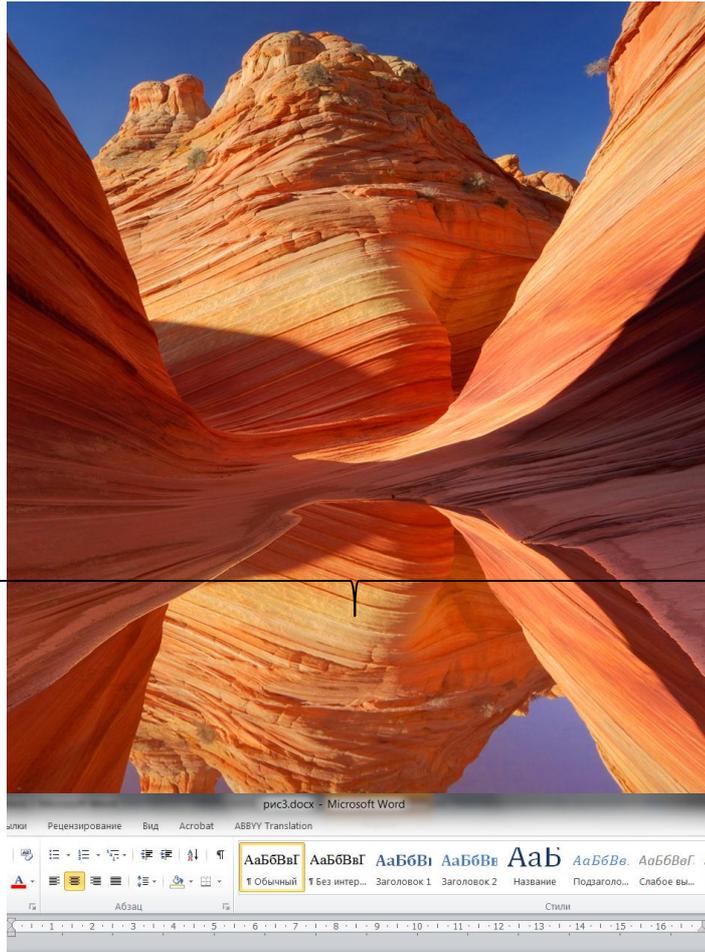
cumulative effect of the SCM, SRM, CRM integration
indicators of the supply chain efficiency

I. Indicators of customer service level (sphere of achieving logistics and marketing objectives)
II. Internal efficiency indicators (sphere of achieving the financial objectives)
III. Indicators of elasticity to demand (sphere of achieving marketing objectives)
IV. Product development indicators (sphere of achieving logistics and marketing objectives)

Fig. 3. Spheres of influence of SRM, CRM concepts in the process context of the supply chain management

Sharing the opinion of the authors [7], we think that the most consonant with the idea of integrating marketing, logistics and finance in the supply chain management and the formation of its optimal strategy of sales activities, on one hand, and with the very Supply Chain Management concept, on the other hand, is the concept of CRM. Similar to CRM, the central place in the supply chain management is given to final consumers, and the content of the entire supply chain activities is to provide them with a unique proposal which meets their requirements, needs and desires in the utmost way. The relationship between CRM and SCM is demonstrated, on one hand, in the fact that in the customer relationship management there is used the information obtained in the process of creating supply chain advantages in the area of supplying customers with particular goods, and, on the other hand, the effective planning and building a logistics system in the context of supply chain management is possible only on the basis of information about consumers behavior. We believe that the integration of SCM and CRM will help to strengthen competitive advantages of supply chains due to, for example, product innovations, leadership in the field of technologies, better quality products, service differentiation, lower prices and operating costs reduction, which will be reflected in the relationship of financial, marketing, and logistic goals and will help to move away from the traditional dilemma "elasticity contra efficiency."

Such attention to the final level of the supply chain, as it has been already stressed above, is reasonable. However, it does not diminish the significance of building partnership relations with other supply chain participants, including suppliers as its primary link. We believe that in the context of marketing and logistics supply chain management equally relevant is the integration "upward" (with consumers) as well as "downward" (with suppliers), particularly, on the basis of the SRM concept, management of relationship with suppliers. In terms of SCM, particularly in American practice, the following definition of SRM is widespread: SPM is a coordinated program of action developed together by consumers and suppliers to improve the overall performance and to reduce the total cost of supply

chains. By combining the capabilities for analysis, evaluation and ranking of suppliers, consolidation of needs in purchasing goods and services, building strategies and forecasting efficiency of interaction with suppliers through the traditional and electronic channels, integration of SCM and SRM will help to identify the best partners – suppliers who best meet to the utmost the requirements of both the chain and its customers.

Thus, conceptually, an integration of SRM, SCM and CRM will allow to control the entire supply cycle: from strategic planning to realization to final consumers. The effect of such integration on the key processes and indexes of the total supply chain management effectiveness are present in Fig. 3. Let us note that two main models that allow to identify the processes in the supply chain, and therefore realize the possibility of its process management are SCOR model and GSCF model [10, pp.230–232], but the whole range of indicators for measuring the efficiency of the supply chain can be represented in terms of the following four groups: indicators of customer service level, internal efficiency indicators, indicators of elasticity to demand, product development indicators [11, pp. 137–170].

Conclusions and perspectives for further research. The Supply Chain Management is a complicated process. Those benefits that arise due to specialization in the production sphere are leveled, "dispersed" in other areas, particularly in sales.

Taking into account the increase in the share of value created outside the organization, contemporary strategic marketing approaches to solving the above problems deserve special attention. It means avoiding contradiction "specialization contra integration" and substituting it by a combination of "specialization and integration". To achieve benefits from such a combination it is necessary to stress the strategic aspect of marketing and its integration with logistics and finances. This integration will help to minimize conflicts of interest of these functional areas and thus achieve competitive advantages. On the other hand, the growing concentration on creating the added value for the end user makes relevant paying more attention to the issues of establishing effective cooperation with him. In this aspect, the use of a different conceptual marketing

platform, namely, partnership marketing, as well as the concept of Customer Relationship Management (CRM), which, in our opinion, is the most consonant with both the idea of integrating marketing, logistics and finance in the supply chain management, and the very concept of Supply Chain Management (SCM) is perspective.

So, a modern platform for building efficient supply chains oriented toward the utmost satisfaction and loyalty of customers should be based on mutual complementarity of marketing and logistics concepts .

Perspectives for further research are seen in deepening the study of the applied aspects of implementing the marketing and logistics approach to supply chain management and specification of the impact of such integration on the key processes and indicators of the total supply chain management efficiency.

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MANAGING ENTERTPRISES WITH THE ACCOUNT OF THE REAL TIME FACTOR

Abstract. It is stated that the basic reason for ignoring the time factor while planning costs of the enterprise is misunderstanding of the "fixed costs' concept. It is proved that the essence of fixed costs is not their dependence on output, but their dependence on time. The way to account this dependence while planning activities of the enterprise is proposed.

Keywords: cost planning, fixed costs, the time factor, the distribution of semi-fixed costs, wages, constant economic indicators.

The main material of the study. Three functions of management – planning, controlling and regulating – play an important role in the management system of any enterprise. That's why it is so important that the planned enterprise performance indexes should be based on the economic processes described by scientifically-grounded dependencies. Otherwise decisions on regulating certain activities can be taken without actual need for this.

But the complexity of the enterprise management is not limited to these three functions (such management functions as "organization" and "motivation" are not implied). It may happen that though the theoretically-grounded plan has been developed there will be no economic mechanism for its implementation. Something similar is now observed in the management of enterprises, particularly in the former Soviet Union countries. We think that this is primarily due to misunderstanding and the incorrect account of the time factor while planning and implementing economic processes. Most negatively this factor affects the planning process and the mechanism of distributing semi-fixed costs.

The purpose of the research is to create a method for planning the fixed costs distribution and the mechanism of this distribution that would account the time factor to the greatest extent.

Consequently, this would create conditions for the objective planning of the enterprise activities.

While studying fixed and variable costs, most economists usually pay most attention only to one feature – their dependence on output. The following characteristic is popular: fixed costs do not depend on output while variable costs do.

We offer the following definitions of these concepts [5, p. 243]:

The semi-fixed costs are the costs that do not depend on the output but *depend on time*;

The semi-variable costs are the costs that *depend on the output* and do not depend on time.

To substantiate the claim that semi-fixed costs depend on time, let us consider two examples.

The first one deals with exploring the nature of the elements that make up these costs. Annual semi-fixed costs consist of the following main elements [6, p.154]:

$$\Pi_{sfc} = \Pi_d + \Pi_{w'} + \Pi_{am'} + \Pi_r , \qquad (1)$$

where Π_d is annual depreciation deductions, $\Pi_{se'}$ is the annual hourly wages, $\Pi_{am'}$ is annual costs of auxiliary materials and Π_r is annual rent.

Depreciation deductions (depreciation rate) depend on the service life of the fixed assets. Annual hourly wages definitely depend on time. Costs of auxiliary materials consist of the following main elements: the costs of workware, labor safety facilities (fire extinguishers, fire boards, etc.), office supplies and energy resources (water, sewage, electricity, heat etc.) that are not used for technological needs. Employees are provided with workware for a certain time (according to the existing standards), irrespective of how much output they produce. Here time factor is important. Fire extinguishers can be used only during the relevant period, and the costs for heating depend mainly on the duration of the heating

period and so on. The total rent cost depends only upon the duration of rent.

The second example deals with the calculation of the cost-effectiveness due to shortening the time of construction.

It should be noted that still in the Soviet period there existed understanding of the semi-fixed costs dependence on time. Most often this dependence was associated with the construction industry. This can be accounted for by the specifics of this industry. The time of producing a particular building product, it being construction of a building or a structure, is quite long (several years). Consequently, the use of semi-fixed costs over time can be seen most vividly here.

To calculate the cost-effectiveness due to reducing the time of constructing an industrial enterprise it was recommended to consider two types of effects [7, p. 516]:

– for the national economy (now this effect should be called "for the owner")

$$E_{ne} = P_e \cdot E_{rf} \cdot (T_n - T_a) = Pr \cdot (T_n - T_a), \quad (2)$$

where P_e is property and equipment (assets) put into operation, E_{rf} is a regulatory factor of overall effectiveness which now can be called "the profitability ratio of fixed assets" for this industry; T_n and T_a are the normative (contractual) and the actual construction periods, Pr is the profit that will be received from the enterprise operation;

– for the contractor (a construction company)

$$E_{CC} = H_{oc} \cdot (1 - T_a/T_n), \quad (3)$$

where H_{oc} is a conditionally constant part of the overhead costs (actually it is the main part of the semi-fixed costs).

The essence of the first effect is obvious, for example, if construction workers build the facility three months earlier than the normative (contractual) term, the owner of the facility (in the Soviet period, the state itself) will receive additional revenue during these three months that actually corresponds to formula (2).

The essence of the second effect is somewhat more complicated. But in a simplified way it can be explained as follows. Let us suppose that a construction company is building only this facility, and only after finishing it will start building another. During the construction all the fixed costs

(as well as all the variable ones) in bookkeeping will be referred to this facility. If its construction period is three months shorter, then all the fixed costs (hourly wages, depreciation, non-productive energy etc.) will not be attributed to this facility (as it has already been put into operation), but to the next one. Consequently, we receive the semi-fixed costs savings that include employee hourly wages, depreciation, and other components of the semi-fixed costs for these three months since these costs are part of the cost price of the constructed enterprise.

Let us make a preliminary conclusion: we cannot say that economists have no understanding of how semi-fixed costs depend on time; however, this understanding is unfortunately very limited as in practice the relation between the semi-fixed costs and time is hardly ever used. In modern economic literature description this relation is almost absent.

Ukraine's transition to the international bookkeeping standards introduced many positive elements in the processes of planning and controlling the enterprise activities. For example, the concept of "the normal enterprise capacity" was introduced, relative to which it is proposed to divide fixed costs into "distributed" and "undistributed" ones etc.

However, there are some vestiges introduced from the past that affect the correctness of the decisions taken. The reason of these vestiges misunderstanding is the incorrect account of the time factor. In a simplified form, this can be explained like this. The main measurers of time in economics are a month, a quarter, and a year. This is logical, because financial statements showing the basic indicators of the enterprise performance are prepared according to these scheduled periods of time. Such a reporting system is similar to a system of different gauges that are used by natural sciences to study any process. But this is the only similarity as natural sciences use "a second" as a basic measure of time which is the constant value with respect to time; and months have a different number of working days ranging from 17 (in some years even fewer), to 25 – 27, i.e. they have different duration. This negatively affects the objectivity of the real economic process reproduction.

Theoretically, in Ukraine there are two main forms of remuneration: the piecework payment and hourly wages. The piecework payment depends on the amount of finished work and hourly wages depend on the number of working hours. But actually, hourly wages in the former Soviet Union and now in Ukraine for managers, specialists and employees were not such because they almost didn't depend on the number of working hours. This is due to the fact that they were paid *"position salaries"*. The essence of this method of remuneration is that an employee receives a fixed monthly salary depending on the position he/she occupies [4, p. 379]. Thus, these employees will receive the same wage even for the months that vary in length and have between 17 to 25 workdays. It is obvious that in this case the time factor is almost not taken into account.

In the developed countries remuneration is paid on an hourly-wage basis. A logical question arises, what is the reason of this contradiction? The essence of this lies in the fact that in these countries the salary is paid in accordance with the number of work hours in a week, not in a month. This is because salaries and all other forms of remuneration are paid on a weekly basis. The benefit of this type of remuneration is that a week has a fixed number of days making it an objective indicator of time duration.

The disadvantage of "position salaries", being popular in Ukraine, is that all of these expenses are included in the final cost of the finished product. And even when an enterprise works evenly (conveyer production), some months with few working days may show losses while in the months with excess number of working days there can be observed the excess profits. This is why the transition of Ukraine to weekly wages, as it is in the most economically developed countries, will improve the distribution of the semi-fixed costs, because the time factor will be accounted for more efficiently. However, monthly distribution of depreciation deductions and other elements of semi-fixed costs, has the same impact on the enterprise performance indicators. Therefore, in order to use a theoretically justified distribution of semi-fixed costs with the account of time, in our opinion, it is necessary to apply more radical measures.

We suggest the following methodical approaches to the distribution of semi-fixed costs with the account of the time factor:

1) time measurements are as lollows:

− the basic units of time: "a year" and "a day" (in some enterprises and for more precise calculations "a year" and "an hour" may be used);

− a year consists of the number of working days, while a working day, which has to be constant, consists of the hours worked;

− all other planned periods (a month and a quarter) are calculated, so their length is determined by the number of working days;

b) the following background information is used:

− productivity of manufacturing in natural units per day or per year;

− yearly semi-fixed costs;

− the product price and its components: semi-fixed and semi-variable costs as well as the normal profit.

Knowing these indicators it is possible to perform theoretically-grounded distribution of semi-fixed costs by time. To prove this statement and to show the discrepancies existing between the traditional distribution method and the one proposed, let us consider the example below.

Let us assume that the enterprise daily output is a constant (conveyer production). The key indicators of its activity and the products manufactured are presented in Table 1.

If the indicators in Table 1 are known, then the calculation of the semi-fixed costs distribution with the account of time (and not the amount of work as it is recommended by the National Accounting Provisions of Ukraine) should be done in the following sequence:

1. The initial productivity and the amount of sales for particular months are determined by the following formulas:

$$Q_{mon.i} = q_d \cdot d_i, \qquad (4)$$
$$R_i = Q_{mon.i} \cdot P, \qquad (5)$$

where q_d is a daily productivity in natural units; d_i is the number of workdays in an i-month and P is the product price;

2. The semi-variable costs are calculated for particular months:

$$SVC_i = P_{svc} \cdot Q_{mon.i}, \qquad (6)$$

where P_{svc} is the semi-variable costs included in the product price.

3. The semi-fixed costs are calculated with the account of time (the proposed method)

$$SFC_i = SFC_d \cdot d_i, \qquad (7)$$

where SFC_d is the semi-fixed costs brought to the daily value, and without the account time (the existing method)

$$SFC_i = \overline{SFC}, \qquad (8)$$

where $\overline{SFC}$ is an average monthly value of the semi-fixed costs.

4. The monthly income is calculated by the formula:

$$Pr_{.i} = R_{.i} - SVC_i - SFC_i. \qquad (9)$$

5. The profitability of production for any given month is calculated by the traditional formula, as the income/cost ratio:

$$e_i = \frac{Pr_i}{SVC_i + SFC_i} \times 100 \cdot \qquad (10)$$

All these indicators can be calculated using their values from Table 1. The results of the calculations are shown in Table 2.

Table 1

**Enterprise performance indicators
and prices of finished products**

No.	Indicator	The number		
1		in a month		in a year
		minimum	maximum	
	Workdays	17	23	247
2	Performance indicators	Indicator value		
		per day	average per month	per year
2.1	Productivity in natural units (n)[*]	100	2058	24700
2.2	Productivity in monetary units (m)[*]	2000	41167	494000
2.3	Semi-fixed costs (SFC), m	600	12350	148200
3	Price indicators	SFC	SVC	Profit
3.1	Price components, m/n	6	12	2
3.2	Price, m/n	20		

Note: * these units of measurement are used:

n – an abstract natural unit (in reality: pieces, tons, liters etc.);

m – an abstract monetary unit (in reality: euros, dollars etc).

Table 2

**The semi-fixed costs distribution and the profitability calculations
in particular months
(with minimum and maximum number of workdays)**

Factor and unit of measurement	sign	Method			
		existing		proposed	
		minimum number of days	maximum number of days	minimum number of days	maximum number of days
Natural Productivity , н	$\Pi_{\text{міс.}i}$	1700	2300	1700	2300
Sales , г	$\Pi_{\text{реал.}i}$	34000	46000	34000	46000
УЗВ, г	$\Pi_{\text{узв}i}$	20400	27600	20400	27600
УПВ, г	$\Pi_{\text{упв}i}$	12350	12350	10200	13800
Income , г	$\Pi_{\text{пр}i}$	1250	6050	3400	4600
Profitability , %	$R_{\text{прод.}i}$	3,8	15,1	11,1	11,1

From Table 2 we see that the traditional distribution of semi-fixed costs, when time is not accounted for, does not correspond to the actual production process. This is explained in the following way. The intensity (productivity) of production in the enterprise considered is a constant because it uses conveyer production. However, the profitability of manufactured products varies between months, by almost 4 times. This does not correspond to its regular, daily flow of production. The contradiction can be eliminated by using the proposed method.

The problem does not lie only in the ability to plan the fixed costs distribution. The next step should be creation of the economic mechanism that would enable implementation of such a distribution. This second stage, in our opinion, is much more complicated than the previous one because it is necessary to change all the norms and methods of calculating wages, depreciation and other elements of fixed costs. Without the documents that are fundamental for creating the economic mechanism the accountants will continue using the old norms. As a consequence, the correct, theoretically grounded plan will not be accomplished. There are going to be observed discrepancies between a plan and its actual implementation.

Conclusions. One of the disadvantages of the existing semi-fixed costs definitions is that the time factor is not taken into account. A month cannot be considered as a time period in planning economic performance indicators because it has a different length (the number of workdays). The existing methods of the semi-fixed costs distribution that don't take the time factor into account and are based on monthly expenses, do not correspond to the real production process. The biggest errors are observed in determining the profit and profitability of the manufactured products. The proposed method of distributing the semi-fixed costs based on consideration of the time factor eliminates these shortcomings and objectively describes the process of production. To implement this method, it is necessary to create the new mechanism for calculating wages, depreciation and fixed costs in general.

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ASSESSMENT OF THE STABILITY OF THE NATIONAL ECONOMY DEVELOPMENT IN THE POSTINDUSTRIAL SOCIETY

Ó Kuzmin O. Ye., Pyrog O. V., MatviyishynV. Ye., 2014

Abstract. The article presents the results of the national economy development stability assessment in the postindustrial society. The method of assessment based on the efficient state management under optimal economic, innovation and investment, and social conditions is proposed.

Keywords: development, economic sphere, sphere of innovations and investments, social sphere, national economy, stability of development, method of assessment, postindustrial society, Ukraine.

Problem statement. The development of the world national economies takes place in the unstable environment resulting in the necessity of the systems transformations of the economic development state control mechanisms that are to create prerequisites for the economies successful adaptation to the changing environmental conditions.

Scientific economists have studied the role of the state in the national economy development for a long time during which the state has been transformed from "the night watchman" (A. Smith) to an active economic agent. The Nobel Prize laureate American economist P. Samuelson questioned M. Friedman's idea of a self-regulating market system [4, p. 16], and noted that without government regulation maintaining economic stability was rather difficult.

Analysis of recent research and publications. The fundamental principles of the state role in a country's economy are dealt with in the works of A. Smith, J. Schumpeter, W. Baumol, P. Drucker, F. Liszt, P. Samuelson, M. Tugan-Baranovsky. The features of the state management of the national economic development are studied by the following Ukrainian scientists: A.I. Amosha [5, 6], B.M. Andrushkiv [5], S.J. Vovkanych [7], A.P.Gaydutskiy, A.S. Galchynskiy, V.M. Geyets [8], B.M. Danylyshyn, M.P. Denyisenko, E.V. Myhasyuk, Y.M. Libanov and others.

Research objective is to propose the method for assessing the stability of the national economy that considers the instability and chaos of the national economy development as well as its structural and technological transformation.

Research material. Under modern conditions of economic development, the state becomes the main economic agent in the national economy acting via state governance mechanisms and state economic policies. By its essence, "management is the process of planning, including forecasting and programming, organizing, motivating (stimulating) and controlling (regulating) that is necessary for formulating and achieving the objectives of the economic agent" [1, c. 892].

In the theory of public administration, there are distinguished three levels of the economic systems management (Fig. 1) and the following methodological approaches to the national economy management: functional, process, systematic, situational and others. According to the functional approach, there are five general management functions of the national economy development: planning (including forecasting), organizing, motivating, monitoring (including analyzing) and regulating that are embodied in actual management practice.

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Functions of state management of national economy	Levels of state management of national economy	Economic agents of national economy

Planning (including forecasting)	Macro-level	National Economy of the State
Organizing		
Motivation	Mezo-level	- regions - clusters / complexes - types of economic activity - spheres / sectors

Monitoring (including analysis)	Micro-level	- individuals
		  - households;
		  - natural person – entrepreneurs.
		- legal entities
		  - commercial organizations
		    • enterprises (big, medium, small);
		    • association of companies (llc, ltd., etc);
		    • financial corporations;
		    • non-financial corporations.
		  - non-profit organizations.

Regulation		

Fig. 1. Interrelations of the national economy management functions and levels with the economic agents
Note: compiled by the authors

The national economy development management should be regarded as a set of functions of state governance comprising planning and forecasting of the development indicators, organizing of the state mechanism to ensure the stability of the national economy operation and development, stimulating the development of the national economy, controlling the conditions and level of the national economy development against the established (planned/predicted) indicators and its regulating.

Stable functioning and development of the national economy, as any dynamic system, can be achieved through the process of governance. Decisions concerning execution of the management functions and the degree of the government interference into the national economy are made by every country independently in accordance with its economic strategy and the economic policy objectives. However, it is possible to isolate a set of factors affecting the decision-making :

1) awareness of the complexity of both theoretical justification and practical implementation of the state presence in the economy, the adequate complexity of the national economy itself;

2) ability of the state as an authority institution to exercise its functions in order to promote the stable development of the national economy through management of all agents of the economic system;

3) state management of the national economy development is considered optimal when not only controlling functions but also regulatory and coordinating functions are realized, though sometimes the state does not pay due attention to them;

4) the system of the national economy development may be considered flexible, if the state authorities are constantly improving models, methods and tools of the state governance adjusting them to the country's strategic goals and objectives as well as the global challenges [2];

5) economic processes in the modern world (such as globalization) make interrelations between countries closer; nowadays, a crisis occurring in one national economy can spread globally [3, c. 82].

So, management of the national economy development should be systematically viewed through the prism of functions: planning, organizing, motivating (stimulating), analyzing, monitoring and controlling of the activities of all the agents of the national economy; this is necessary for public officials to make adequate decisions on the further development of the national economy.

Considering our national economy openness and growth of negative external tendencies, it is necessary to improve the existing assessment methods of the Ukrainian economy development, the methods having been developed with the account of the main principles of the macro-level state governance: the absence of the stable trends in the national economy development, i.e. unstable, or chaotic development, negatively affects the present conditions and the further development of the national economy.

Analyzing the economic development stability level following the proposed approach allows to determine the national economy present condition and the further development tendencies as well as to identify the "jumps" and asymmetry in its development. Analysis of the national economy development stability is also the basis for determining development priorities and decision-making at macro – and mezolevel, this allowing to determine compliance or non-compliance of the national economy development with the nation-wide criteria, to identify strengths and weaknesses in the state governance of the national economy and to discover specific mezolevel features.

The general sequence of analyzing the research object's stability consists of four mutually agreed and logically constructed stages (Fig. 2).

Using correlation and regression analysis, from the set of 32 indicators there were selected 23 indicators, they significantly affecting the stability of the national economy: Gross Domestic Product (GDP) (macrolevel) or Gross Regional Product (mezolevel) (X_1); industrial output (X_2); the volume of agricultural production (X_3); the amount of foreign direct investment (X_4); the amount of investments in fixed assets (X_5); the number of subjects of EDRPOU (X_8); the number of small enterprises per 10 thousand of population (X_{10}); the level of renewal of fixed assets (X_{14}); foreign trade balance (X_{16}); export/ import ratio (X_{17}); the proportion of firms that introduced innovations in the total number of enterprises (X_{18}); Consumer Price Index (X_{19}); incomes of the population (X_{20}); expenditures of the population (X_{21}); average real wages of workers (X_{22}); employment (X_{23}); registered unemployment rate (X_{24}); labor demand (X_{26}); productivity of employees (X_{28}); load per one workplace (X_{29}); proportion of businesses that created and used advanced technologies in the total number of enterprises (X_{30}); level of financing innovative activity (X_{31}); expenditures on scientific and technical works (X_{32}).

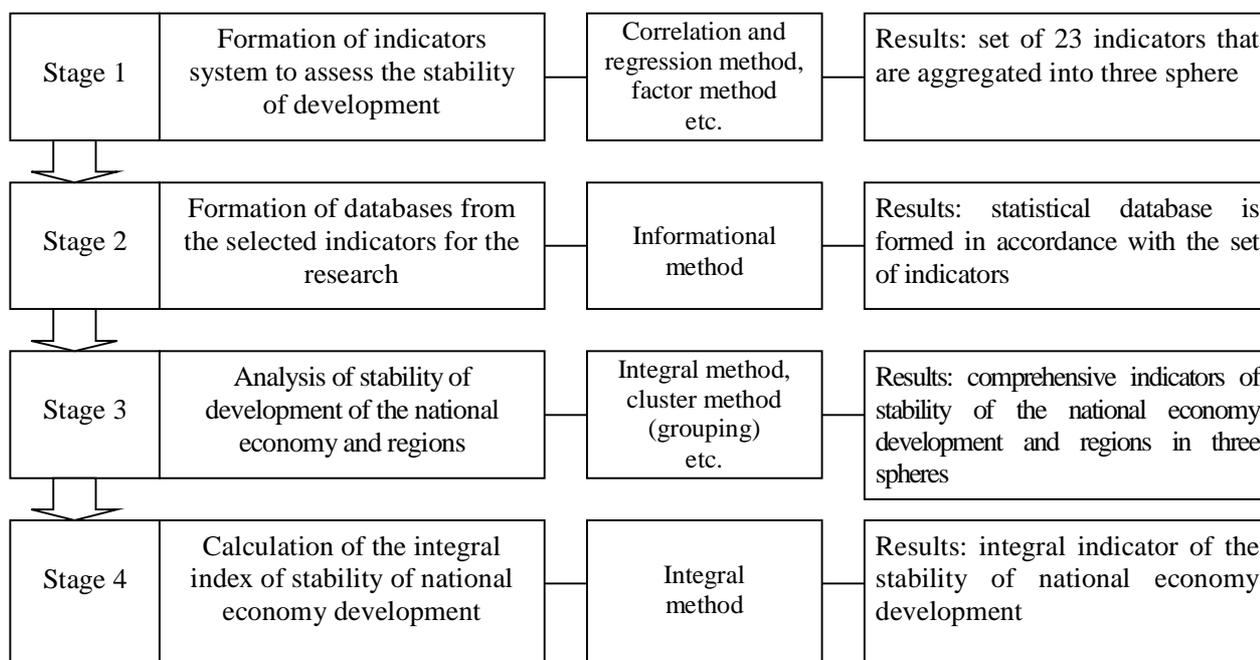| Stage 1	Formation of indicators system to assess the stability of development	Correlation and regression method, factor method etc.	Results: set of 23 indicators that are aggregated into three sphere
Stage 2	Formation of databases from the selected indicators for the research	Informational method	Results: statistical database is formed in accordance with the set of indicators
Stage 3	Analysis of stability of development of the national economy and regions	Integral method, cluster method (grouping) etc.	Results: comprehensive indicators of stability of the national economy development and regions in three spheres
Stage 4	Calculation of the integral index of stability of national economy development	Integral method	Results: integral indicator of the stability of national economy development

Fig. 2. Sequence of analyzing the stability of the national economy development

Note: compiled by the authors

The indicators selected have been aggregated by three directions using factor analysis: "economic sphere (I_{es})" (1), "sphere of innovations and investments (I_{is})" (2) and "social sphere (I_{ss})" (3):

$$I_{es} = F\left(X_1, X_2, X_3, X_8, X_{10}, X_{16}, X_{17}\right); \quad (1)$$

$$I_{is} = g\left(X_4, X_5, X_{14}, X_{18}, X_{30}, X_{31}, X_{32}\right); \quad (2)$$

$$I_{ss} = f\left(X_{19}, X_{20}, X_{21}, X_{22}, X_{23}, \right.$$
$$\left. X_{24}, X_{26}, X_{28}, X_{29}\right). \quad (3)$$

We suggest calculating the integral indicator of the national economy development stability (SD_{ne}) by the following formula:

$$SD_{ne} = \sqrt[3]{I_{es} \cdot I_{is} \cdot I_{ss}}. \quad (4)$$

The proposed system of indicators of the country's economic development allows to objectively and fully assess its quality by parameters of economic, innovation and investment, and social spheres, and thus provides an environment for making informed decisions on forming the model of the country's future development. The indicators that are reflecting the development of the national economy in the current situation are: Gross Domestic Product (GDP) (macrolevel) or Gross Regional Product (mezolevel) (X_1); amount of foreign direct investment (X_4); amount of investments in fixed assets (X_5); the number of small enterprises per 10 thousand of population (X_{10}); proportion of the firms that introduced innovations in the total number of enterprises (X_{18}); productivity of employees (X_{28}); proportion of businesses that created and used advanced technology in the total number of enterprises (X_{30}); the level of financing innovative activity (X_{31}); expenditures on scientific and technical works (X_{32}). As a result, the integral parameters of the national economy development stability were calculated, they being between 0 and 1. The levels of these parameters were classified into four groups which are formed by the criteria of mathematical statistics:

– Group 1 includes the development stability indicator within $0 \le SD_{ne} < 0.25$ characterized by high development stability in economic,

innovation and investment as well as social spheres;

– Group 2 includes the development stability indicator within $0.25 \le SD_{ne} < 0.5$ characterized by a medium level of stability in all the three areas;

– Group 3 includes an indicator of development stability within $0.5 \le SD_{ne} < 0.75$ characterized by unstable development;

– Group 4 includes an indicator of development stability within $0.75 \le SD_{ne} < 1$ where the studied object is characterized by chaotic development in economic, innovation and investment, and social spheres, indicating a rapid, disorganized and irregular development of the national economy.

According to the results of the research, it was found that during the 2000 – 2013 period the paradigm of the national economy development of Ukraine did not change that proves the average stable level of the national economy development ($SD_{ne} = 0.252$). However, the regional development dynamics is not homogeneous: in Cherkasy (0.356) and Kyiv (0.354) regions changes were going on and this is reflected in their unstable and even chaotic development, while Mykolayiv (0.249) and Chernihiv (0.255) regions were developing steadily that indicates the retention of the industrial type of the national economy.

The dynamics of the integral indicator components of the national economy development stability in economic (I_{es}), innovation and investment (I_{is}) and social (I_{ss}) spheres of Ukraine is presented in Fig. 3.

The results of the calculations make it possible to determine in what spheres of the national economy by specified directions there are or there are no tendencies to stability in the country in general and in particular regions. Thus, according to the integrated indicators, the development of the Ukraine's national economy is characterized by the tendencies of asymmetry: instability of development in the innovation and investment sphere, the average stable level of development in the social sphere and the stable level in the economic sphere.
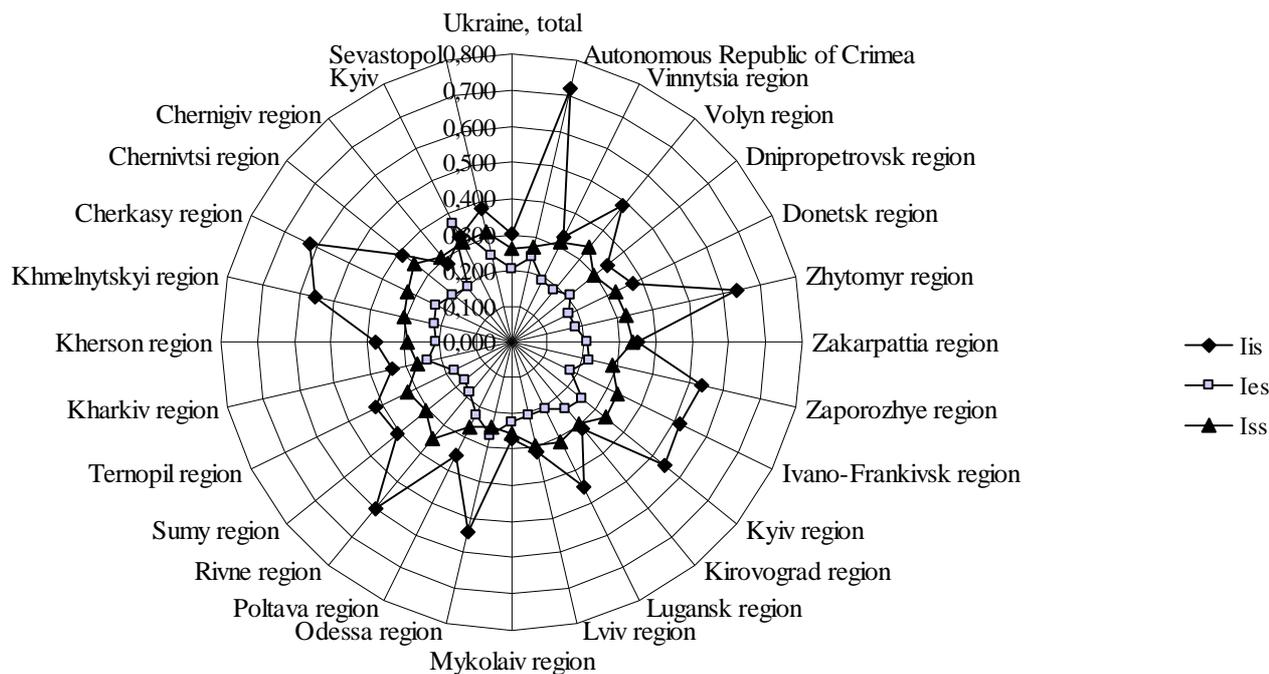
Fig. 3. Dynamics of the integral indicator components of the national economy development stability in economic (I_{es}), innovation and investment (I_{is}) and social (I_{ss}) spheres of Ukraine during 2000 – 2013

Note: compiled by the authors based on the results of their own research

In the economic sphere of Ukraine as a whole country and in all its regions, there are observed the trends of stability by such indicators as the development of business activities, industrial and agricultural production. However, the chaotic tendencies of the national economy development are characteristic for innovation and investment sphere (innovation activities of enterprises, investment in fixed capital and foreign direct investments) and foreign economic affairs (foreign trade balance). We believe that the existence of the stability trends in certain areas and spheres of the national economy (in the country in general and in its particular regions) is explained by the level of the state governance and the state policy commitment, namely by the government priorities in the national economy development, implementation of the government programs and national projects.

In the social sphere of the national economy during the studied period there are also indicators that signal either presence or absence of the development stability tendencies. Thus, indicators that are characterized by stability are the labor market (employment and unemployment rates, wages) and the consumer market; while the indicators with no trends of stability include productivity, incomes and expenditures of the population. Similar to the economic sphere, existence of stability trends in certain spheres of management of the national economy development (in the country in general and in particular regions) is explained by the level of state governance and state priorities in social development, implementation of the government programs and national projects.

Conclusions. The proposed methodical approach to assessment of the national economy development stability is achieved on the basis of the efficient state management under optimal economic, innovation and investment, and social conditions. It has been discovered that instability and chaos of the national economy development is observed during the economic paradigm change accompanied by both structural and technological transformations. The developed methodical approach to the national economy development assessment is multivectoral because it allows carrying out assessment and analysis of all areas of the national economy.

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STATE AND FACTORS OF DEVELOPMENT PERSPECTIVES OF TOURIST ACTIVITY IN UKRAINIAN REGIONS

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Abstract. In the paper the regional peculiarities of tourism activities in the regions of Ukraine have been analyzed with use of correlation analysis, the method of a point assessment and with definition of the coefficient of determination. The impact of the factors such as competition in the tourist market, the population size and personal income, tourism resources on the development of tourism business has been analysed. The comparison of the tourist potential of the regions of Ukraine has been carried out with the use of the value index of tourist enterprises. A comprehensive assessment of the internal tourism potential of the regions of Ukraine has been implemented. It has been determined that the lack of attention to peculiarities of each region is one of the major shortcomings of the state policy of tourism regulation under the conditions of limited financial resources. At that choice of the state regulation is complicated by the perspective of Ukraine`s integration into the international community the essential condition of which is a strong and competitive tourism industry.

Keywords: tourism, region, tourist activities, entities of tourist activities, functions of tourism, coefficient of determination, potential of tourist enterprise competition.

Introduction. The development of tourism industry demands attention not only from interested businessmen, but also from state authorities and governance, especially local authorities. Tourist sphere should get firstly, the appropriate signals from the mentioned bodies concerning prospects of its development, and, secondly, coordinate their actions with other sectors of the regional economy, in the conditions of possible decentralization of power, but rather the transfer of more powers competence to the local government. The interaction between tourism enterprises and their associations with local governments has to become the most effective and useful to each of the local communities in these aspects.

The analysis of the recent research and publications. Researchers of tourism industry revealed different aspects of functioning of enterprises which made it possible to work more effectively to satisfy the human needs in journeys within Ukraine and abroad. In particular, the potential possibilities of individual regions [1-4], the presence of certain tourism resources [5], including the possibility of their use in terms of the principles of sustainable development [6] were studied. However, the tasks remain still unresolved that have arisen due to the expansion of tourism opportunities in recent years, both for the Ukrainians travel abroad and for foreign tourists who arrive in Ukraine.

Problem statement. Therefore, it is advisable to conduct research to reveal regional features that influence the development of tourism business for their further consideration and use in the state regional programs.

The purpose of our research is the identification of regions where favourable conditions are created for tourism business development on the basis of the integrated analysis of social, demographic, economic, and financial performance of travel and human resources of regions of Ukraine.

The following tasks have been identified to achieve the purpose:

1. To analyze the effect of five factors: market competition, population and household

incomes, tourism resources and the cost of tourism enterprises to develop tourism business.

2. To draw the conclusions about the regions which are most favourable for tourism business development based on comprehensive analysis.

The correlation analysis, the coefficient of determination, ballroom evaluation methods have been used during the research.

Presentation of the main research and explanation of scientific results. Each territory as a potential area for tourism development has real characteristics and differences in tourist resources and infrastructure, economic development and foreign trade, the mentality and the level of needs of the population, demographic and migration processes, and so on. Therefore the specifics of regions in the all-Ukrainian structure, the level of development of local government, problems of protection and restoration of natural and historical and cultural tourist resources have to be considered on the basis of the tourism policy of a region.

Our research includes the evaluation of factors that influence the development of tourism in the region: the competition in the market, the population size and household incomes of population, the region and the available tourism

resources. The correlation analysis was used to determine their impact on the development of tourism business. The coefficient of determination R^2 shows the constraint force between the amounts of data selected for analysis.

One of the most important factors of influence on development of the tourism business is market saturation of tourist enterprises that creates competition. So, the index is considered to be optimal in European countries when one travel company accounts for 10 thousand people. Under such conditions the most favorable competitive environment is created in the market. In Ukraine one tourist company accounts for 9.5 thousand people which corresponds to favourable tourist market according to European standards. But it is advisable to explore regional differences of tourist competitiveness.

On this basis, based on the index of "10 thousand people for one tourist company", we suggest classifying competitive the markets of tourist business in Ukraine into three groups (see figure.): index above the norm (over 10 thousand) means that the competition is low; the normal index means normal competition; if the index is below normal, the competition is high.

1. the index above the norm, the competition is low;
2. the index in the norm, the competition is normal;
3. the index is below normal, the competition is high.

Distribution of competition between tourist enterprises by regions of Ukraine (created by the authors [10])

We can conclude by the calculated data about the areas where it is easier to enter the market (where competition is low or normal) and areas where it is more difficult to enter the market because competition is very high there. The competition is a guarantor of continuous progress of society, its stagnation in the economy [4, p. 231], promotes the use of innovations, resource conservation, expansion of the assortment. But its inseparable companions are conflicts, instability, bankruptcy, lying off workers and aggressiveness of the information environment [11].

Dependence of quality of tourist enterprises on the population of the region has a strong complying, which the correlation coefficient $R^2=0,7$confirms. We also define the relationship between the population size and profitability of tourist enterprises. This index will be $R^2 = 0,42$, while the relationship between the urban population and profitability will be $R^2 = 0,58$. Dnipropetrovsk, Donetsk, Lugansk, Kyiv, Kharkiv regions (from 80.1% to 90.6%) belong to the regions of Ukraine with a high share of the urban population [12, p. 23]. The index of urban population should be a reference for the development of activity of tourist enterprises in the particular region. The urban population has a greater need for tourism (sedentary work, depression, severe intellectual labour) than rural, as well as greater financial capacity in case of departure outside their region or abroad.

The above is confirmed by the study of another factor which is the *solvency of the population.* Thus, the investigation of the connection between the number of tourist enterprises and household incomes (average monthly salary) shows dependence of $R^2 = 0,6$.

Another important index is potential of the company. Categorical apparatus of a potential enterprise is characterized by the breadth of scientific views. In this paper we consider the potential of tourism enterprises as a collection of travel resources (labour, material, technical, financial, innovation, etc.) skills and opportunities of managers, professionals and other categories of personnel for the implementation of services (operations) to maximize revenue (profit) and the functioning and development of tourism enterprises on the basis of interpretation of the tourism potential Repin I. (1998), [13]. The potential of the company is a complex, dynamic, multystructural system. This agglomeration has its own laws of development, whereby efficiency of the economy, the tempos and quality of its growth critically depend on ability to use them.

For comparison of the tourist potential of the regions of Ukraine, we have chosen the way of determining the value of the enterprise according to the income capitalization method proposed in the textbook [14]. There are a lot of ways to determine the potential of the company according to the specified method. As shown in international practice, there are options to determine capitalization:

– Nearest in operation time over the last twelve months or for the financial year;

– Operations are projected for the following year;

– The average value of transactions for the last few years;

– Rate of net profit (subject to a possible expansion in future periods).

To determine the value of the company we have chosen income capitalization method, for this we choose the net income as a basis which the company received at the end of the year. To determine an adequate discount rate we use the method of constructing cumulative that is on the basis of consideration of risk factors that together represent the characteristics of the total revenue, which is needed to compensate for the overall risk in the assessment of the company. Calculation of capitalization is shown in Table. 1. Capitalization rate calculation involves determining the values of capitalization rates specifically for the tourism industry. In the final calculation the effect of the numerical value of each component based on the size of the capitalization rate is also taken into account that is an increase (plus sign) or decrease (negative sign) of rates.

The average rate on deposits in dollars for one year of the end of 2013 is 7.5% as the risk-free rate of return on capital was selected [15]. The risk-free rate of return on equity reflects the guaranteed income that can be gained from investments with low risk.

The average premium for the risk of small-sized enterprises ranges from 2 to 6% according to international practices [14]. Due to the fact that in comparison with enterprises counterparts who work in the tourist industry, the company has a smaller size, which means that it may have a greater rate of return in the future, and hence a higher premium for risk is need for it. Therefore, we have selected a premium for risk depending on a company size – 5%.

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Table 1

Calculation of capitalization rates according to the method of a cumulative construction

№	Components for the determination of the capitalization rate	The numerical values of the individual components and the results of calculation,%
1	The risk-free rate of return on capital (R_{r-f})	7,5
2	Risk premiums depending on the size of tourist enterprise (S_r)	5
3	Other risk factors: branch risk (RF_b) financial risk (RF_f) diversification (RF_d) competence of management (RF_m)	 from 1 to 3 % 5 % 4 % from 3 to 6%
4	Discount rate for net income (Rc)	from 25,5 to 29,5 %
5	Average annual rate of growth of net income	Calculate the ratio of the current year to the previous
6	The coefficient of capitalization of net income	8,5

As for other risk factors, we have chosen the numerical values of the components to calculate the capitalization rate in accordance with the re-commendations of the researchers of the problem, the potential of enterprises [14]. We choose risk premium for branch 3% for companies with high competition, 2% is normal, 1% is lower (Fig.).

Premium for financial risk we choose at 6% because there is instability in the country today [14]. Premium for risk diversification we select at 4%, as the company does not have enough broad diversification of production and is almost completely dependent on the presence of tourists [14]. Premium for risk of management compe-tencies we choose depending on the proportion of full-time employees of tourist activities that have higher or secondary specialized education in the field of tourism, calculated by the author on basis of the materials of the State Statistics Service of Ukraine [10]. If aforementioned rate of employees is greater than 50% (according to statistics is typical of Kyiv, Rivne, Sumy, Ternopil, Kharkiv, Cherkasy regions, city of Kyiv) then the premium for the risk of management competencies we choose 3%; if it is from 40 to 50% (Lutsk, Dnipropetrovsk, Donetsk, Zaporizhzhia, Luhansk, L'viv, Odesa, Khmelnytskyi regions), the premium for the risk is 4%; 30 to 40% (Vinnytsia, Chernivtsi, Chernihiv regions and Crimea) is 5%; if it is less than 30% (Zhytomyr, Uzhhorod, Kirovohrad, Mykolaiv, Kherson, Poltava regions, Sevastopol city), the premium risk is 6%.

Thus, according to Table 1 we calculate the discount rate for net income (Rc) summing components for the determination of the capitalization rate in lines 1-3 as follows:

$$R_c = R_{r-f} + S_r + RF_b + RF_f + RF_d + RF_m. \quad (1)$$

After calculations we obtain the value of the discount rate for net income (Rc) from 25.5 to 29.5%. The rate will vary by regions depending on the industry and risk of management expertise.

$$25,5 < 7,5 + 5 + b(1-3) + 5 + 4 + m(3-6) < 29,5$$

The average annual growth rate of net income is calculated on the basis of the net income ratio of tourism enterprises of some regions in the current year (2012) to the last (2011) year. To calculate this indicator the data of the State Statistics Service of Ukraine were applied [10]. Thus, this indicator ranges from 1 to 19% depending on the region.

Calculating the cost of the company, first we find the net profit calculated according to the formula:

$$Pn = I \times \mathrm{Tct} , \quad (2)$$

where, P_n – are net profits, 2012; I – is income from tourist services (without VAT, excises and similar mandatory payments are operating expen-ses); T_{ct} – is corporate income tax (in 2013 – 19%).

Then we calculate enterprise value by the selected data according to this formula:

$$V = \frac{In}{Rc}, \quad (3)$$

where, V – is enterprise value in 2012; R_c – is capitalization rate 2012.

The calculated data by the regions are shown in Table 2.

Table 2

Tourism potential of regions of Ukraine (calculated by the authors)

Entities engaged in tourist activities					
Legal entity				Physical entities, travel agents	
touroperators		touragents			
5650,9	Kyiv city	94,0	Kherson region	19,0	Chernihiv region
413,9	Ukraine	10,6	Donetsk region	19,0	Kharkiv region
92,8	L'viv region	2,7	Crimea	18,7	Vinnytsia region
29,6	Mykolaiv region	1,0	Khmelnytskyi	12,5	Ukraine
10,2	Khmelnytskyi region	0,5	Zaporizhzhia region	11,7	Kirovohrad region
7,3	Luhansk region	0,2	Vinnytsia region	10,8	Dnipropetrovsk region
6,1	Kharkiv region	0,2	Poltava region	8,9	Luhansk region
4,0	Odesa region	0,2	Dnipropetrovsk region	8,5	Odesa region
3,5	Vinnytsia region	0,1	Kyiv region	6,5	Donetsk region
2,9	Zaporizhzhia region	0,1	Ternopil region	5,5	Poltava region
2,1	Dnipropetrovsk region	0,1	Zhytomyr region	4,9	Sevastopol city
1,9	Rivne region	0,1	Lutsk region	4,7	Lutsk region
1,5	Uzhhorod region	0,0	Ivano-Frankivsk region	4,5	Ternopil region
1,2	Sumy region			3,7	Khmelnytskyi region
0,4	Zhytomyr region			3,4	Zaporizhzhia region
0,2	Ternopil region			3,0	Mykolaiv region
0,1	Kyiv region			2,6	Chernivtsi region
				1,6	Rivne region
				1,5	Crimea
				0,9	Uzhhorod region

All indicators are published in the Statistical Yearbook of Ukraine, Statistical Yearbook "Ukraine at a Glance" and statistical bulletin "Tourist activity in Ukraine".

The ***tourist resources*** of the region are an equally important factor. The group of authors [5, p. 88–89] conducted a scoring of tourist potential of each region in the following directions: historical and cultural tourist resources, objects of nature conservation, natural and recreational objects. The level of provision of each region was estimated by 3-point scale: high, medium and low. We have made an attempt to deduce an overall assessment of the tourist potential of each region equating the above characteristics to scores and summing up. As a result there are regions with a different share of tourism resources:

1. The high concentration of tourist resources (the pooled estimate of 9-11 points) has been found out in Vinnytsia, Ivano-Frankivsk, L'viv, Ternopil, Kherson and Chernihiv regions and Crimea.

2. The average concentration of tourist resources (6-8 points) has been found out in Kyiv, Odesa, Lutsk, Zhytomyr, Zaporizhzhia, Poltava, Rivne, Cherkasy, Kharkiv, Mykolaiv, Sumy and Chernivtsi regions.

3. Low concentration of tourist resources (3-5 points) has been found out in Uzhhorod, Khmelnytskyi, Kirovohrad, Dnipropetrovsk, Luhansk and Donetsk regions.

Communication among tourist businesses and profitability of tourism resources estimated on the basis of these data is absent ($R^2 = 0,006$). However, when planning a range of services of tourist enterprises we must consider that the existing tourist resources in the region influence the direction of tourist flows: it is also worth considering when developing programs for tourism development by local authorities.

Generalizing the results of the research we have generated consolidated scoring of derived indicators. Results of the research are summarized in Table. 3.

I. V. Aleksieiev, T. S. Trusova

**Comprehensive assessment of internal tourist potential of regions
of Ukraine (calculated by the authors)**

Name of the factor / Region:	competition (1-high competition, 2-average competition, 3-high competition)	The cost of tourism enterprises (loss-making enterprises – 1 point, companies whose value is between 0 and 15 – 2 points above 15 – 3 pts). Points take into account all forms of ownership of tourist enterprises	The level of provision of regional historical and cultural tourism resources, objects of nature reserves and natural and recreational objects	Total
Crimea	1	3	3	7
Vinnytsia	3	3	3	9
Lutsk	3	2	2	7
Dnipropetrovsk	2	3	1	6
Donetsk	2	3	1	6
Zhytomyr	3	1	2	6
Uzhhorod	2	3	1	6
Zaporizhzhia	2	3	2	7
Ivano-Frankivsk	2	2	3	7
Kyiv	3	1	2	6
Kirovohrad	3	2	1	6
Luhansk	3	3	1	7
L'viv	2	3	3	8
Mykolaiv	3	3	2	8
Odesa	2	3	2	7
Poltava	3	3	2	8
Rivne	3	3	2	8
Sumy	3	2	2	7
Ternopil	3	2	3	8
Kharkiv	2	3	2	7
Kherson	3	3	3	9
Khmelnytskyi	3	3	1	7
Cherkasy	3	1	2	6
Chernivtsi	1	2	2	5
Chernihiv	3	3	3	9

Conclusions. Thus, the conducted research has revealed regions of Ukraine with the most favourable conditions for tourism development and the creation of new enterprises of tourism industry. However, the research describes the perspective from the standpoint of the potential use of internal resources (potential tourists and their solvency, competition in the market) and ignores the incoming flows, the tourist image of the region, the development of infrastructure and the level of shadow economy. That is why, for example, such a tourist region like Uzhhorod has a low rate of domestic tourist potential.

Results of the research (the proposed method and the results of calculations) can be used in the planning of regional development of regions by

local authorities, as well as to improve the performance of tourist enterprises. So, in terms of the research, the development of domestic tourism is promising in Vinnytsia, L'viv, Mykolaiv, Poltava, Ternopil, Rivne, Kherson and Chernihiv regions where the tourism market is characterized by low competition, high concentration of tourist resources and available capacity.

One the way of further research of this direction the determination of the coefficient will be possible that will show the feasibility of the development of tourism in a particular region taking into account additional parameters.

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ANALISYS OF DIVERSIFICATION ON MACHINE-BUILDING ENTERPRISES: INNOVATIVE APPROACH

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Abstract. The concepts "diversification'' and "innovative activity" are considered in the article. The development of diversification of machine-building enterprises of Lviv Region is investigated through the analyzys of their innovation activities. The following indicators of innovative activities of Lviv Region enterprises are analyzed: the number of companies that have implemented new technological processes and developed the innovative types of products; number of implemented technological processes in machine-building enterprises; the output of realized innovative products of machine-building enterprises.

Key words: diversification, innovative approach, innovative activities, the output of realized innovative products.

Introduction. The significant task of the domestic economy of Ukraine is to provide the possibilities for economic development of industries and machine-building in particular. The machine-building complex provides the production of various machines, apparatus, devices, equipment, vehicles etc., that contributes to the effective development of other industrial branches. The provision of the development of the machine-building sector in a current period and in a future is possible in case the innovative activities at business entities are activated (promoted).

The research theme is actual as in a free market economy enterprises carry out their activities in an environment that is characterized by the high level of competition. As a consequence the enterprises should adjust their activities to the permanent changes.

In order to carry out the innovative activities on the enterprises effectively it is necessary to utilize the natural, labor and financial resources rationally and also to consider the positive and negative impact of such factors as: social, economic, legislative, scientific, technical and political ones, etc. Besides it should be noted that one of the factors that motivates enterprises to develop and introduce the innovations actively is the diversification. Due to the diversification the enterprises are developing. The development, modernization and the introduction of new types of commodities and technological processes are the results of such businesses' development.

Analysis of the literature on the problem. Among the scientists who investigated the innovative activities of the enterprises are such scholars as: B.Dadashev, O. Kantajeva, L. Antonyuk, Yu. Bazhala, P. Bubenko, O.Vasylenko, V. Me'lnychenko, T.Dudar, V. Landyka, L. Fedulova, M. Denysenko, R. Fatkhudinov, I. Rudakov, P. Zavlin etc. In addition, a great number of the scientific papers are dedicated to the investigation of the diversification as means of the development of innovative activities, namely: O. Tsogla, O. Kuzmin, V. Trubchanin, K. Bilets'ka, G. Peresad'ko, M. Korin'ko.

T.Dudar and V.Mel'nychenko treat innovative activities as the activities related to the implementation of the results of the scientific researches, production of new goods and services [1]. The scientists distinguish such basic types of innovative activities on industrial enterprises as: the development and the introduction of a new or an improved commodity, technology, organizationally-technical decisions and mastering of the process related to the production [2].

In the opinion of M. Korin'ko the diversification is "an innovative process of the versatile development of businesses by means of the resources redistribution, penetration into the other production branches and joining the markets of new commodities

and services with the purpose to decline risk and increase profit" [3, p. 13]. On the basis of this determination the diversification, first of all, is considered to be an innovative process that provides for the development of new types of products, inducing enterprises to introduce the innovations (machines, equipment, vehicles, devices and other).

Tsogla O. offers such determination of diversification – "it is an industrial and economic process that due to the mastering of new commodity markets, expansion of the nomenclature of goods and services, distribution of investments between the different of business participants, gives an opportunity to overcome the dependence on one type of activity or products, enables the reduction of enterprise's risk and provides the adaptation of enterprise to the dynamic changes of the environment, and in prospect competitiveness and financial stability" [4, p. 432]. As a result of such interpretation of the concept it is possible to define the basic directions of diversification: production, sale and investments.

During the realization of diversification on enterprises there are changes in innovative processes, namely: improvement and development of technique, technology, instruments, equipment etc. [4]. A company can diversify its activities both in related and unrelated completely new industries, that will activate innovative activity [5].

The purpose of the paper. The main purpose of the article is to investigate the development of diversification on the machine-building enterprises of Lviv Region on the basis of the analysis of their innovative activities.

The presentation of the main research material. Having worked out a lot of scientific literature we will analyze the diversification on machine-building enterprises considering innovative approach. Hence, on the basis of statistical data we will analyze the diversity of innovative activity on machine-building enterprises of Lviv Region for the period of 2009–2012. The introduction of new types of products and up-to-date technological processes could be related to as spheres of diversification if we consider the innovative activities of the enterprise.

Fig. 1 illustrates the amount of machine-building enterprises of Lviv Region which were introducing new technological processes and

mastering innovative types of products during 2009–2012.
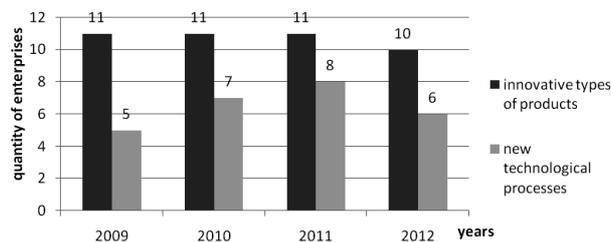
Fig. 1. The amount of machine-building enterprises of Lviv Region which were introducing new technological processes and mastering innovative types of products during 2009-2012 [6]

According to the statistical information the quantity of the enterprises which were introducing the technological processes during 2009–2012 was increased, but in 2012 their number was reduced to 6. Concerning the mastering of innovative types of products we should mark a stable tendency during 2009-2011 and the reduction of the amount of enterprises (mines 1enterprise) in 2012.

The innovative types of product include mastering of:

– machines, devices, vehicles, equipment;

– materials, goods, products.

As a consequence, it is possible to distinguish such kinds of diversification of innovative types of products as: productive (materials, goods, products) and technical (machines, devices, vehicles, equipment). In statistical annual catalogue the development of machine-building complex is represented by three basic constituents [6]:

– production of machines and equipment;

– production of electric, optical and electronic equipment;

– production of transport vehicles and equipment.

The production of machines and equipment includes the production of agricultural machines, machine-tools, appliances, general-purpose vehicle, machines for metallurgical, mining and building industry; and machines intended for processing of products of agricultural industry. The production of electric, optical and electronic equipment presupposes the manufacturing of office, accounting, electronic machines and apparatus, equipment for radio, television connection, medical devices and instruments, exact measuring and optical devices, clocks. The production of transport vehicles and

equipment includes the manufacturing of vehicles, railway, tramcar locomotives, rolling stock, bicycles, motor cycles, the construction of air, space, aircrafts and ships [7, p. 76].

The dynamics of mastering of innovative types of products by enterprises during 2009–2012 in accordance with the constituents of machine-building complex is illustrated in Table 1.

First we will analyze how enterprises are mastering machines, equipment, vehicles and devices (Table 1). Mastering of production of technical innovations (machines, equipment, vehicles, devices) comparatively with 2011 has slightly changed, in particular, there was a reduction by 48,2 %. It is related to the decrease in output of machines, equipment, devices, vehicles in the field of an electric, electronic and optical equipment by 78,9 %, and also in the field of machine-production and equipment by 66,7 %. However in 2012 a situation

got better. It was confirmed by the increase in mastering of production of technical innovations by 20 %.

The next step is to analyze the dynamics of mastering of product innovations (materials, products, goods) by enterprises of machine-building industry. A positive tendency is characteristic feature of a period 2009–2011. It was caused by the considerable increase of production of product innovations in the field of electric, electronic and optical equipment. However, rapid reduction in mastering of production of product innovations on the enterprises of machine-building complex in 2012 may be explained by complete absence of realization of innovative activity in the field of vehicles and equipment, and also by reduction of innovative activity of enterprise sectors by 41,2 % in the field of electric, electronic, optical equipment and by 50 % in the field of machines-building and equipment.

Table 1

Mastering of innovative types of products by the enterprises of Lviv Region during 2009–2012 [6]

Machine-building industries	Indexes, number			
	2009	2010	2011	2012
Machines, devices, vehicles, equipment				
Production: machines and equipment	4	3	1	5
electric, electronic and optical equipment	17	19	4	10
vehicles and equipment	3	7	10	3
Machine-building in general	24	29	15	18
Materials, products, goods				
Production: machines and equipment	4	3	4	2
electric, electronic and optical equipment	-	4	17	10
vehicles and equipment	3	7	-	-
Machine-building in general	7	14	21	12

Table 2

Introduction of new technological processes on the machine-building enterprises of Lviv Region during 2009–2012 [6]

Machine-building industries	Indexes, number				Absolute deviation, number		
	2009	2010	2011	2012	2010	2011	2012
Production: machines and equipment	4	3	1	3	-1	-2	2
electric, electronic and optical equipment	1	4	7	3	3	3	-4
vehicles and equipment	3	3	1	-	0	-2	-
Machine-building in general	8	10	9	6	2	-1	-3

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Table 3

**Quantity of innovative output of machine-building enterprises
of Lviv Region during 2009–2012 [6]**

Machine-building industries	Indexes, thousands hryvnyas				Average rate of increase, %
	2009	2010	2011	2012	
Innovative for markets					
Production: machines and equipment	1422,1	1223,0	1725,0	1631,0	14,7
electric, electronic and optical equipment	809,2	10117,0	15602,4	4496,3	455,6
vehicles and equipment	173662,2	4111,1	17524,0	5114,8	-97,1
Machine-building in general	175893,5	15451,1	34851,4	11242,1	-93,6
Innovative for enterprises					
Production: machines and equipment	5071,5	8081,6	6966,9	6114,3	20,6
electric, electronic and optical equipment	21043,0	37229,9	1345,7	930,6	-95,6
vehicles and equipment	19371,9	105671,9	7895,5	2965,7	-84,7
Machine-building in general	45486,4	150983,4	16208,1	10010,6	-78,0

Statistical data determining the amount of the introduced technological processes by the enterprise structures of machine-building complex during 2009–2012 are given in Table 2.

As it is illustrated, the quantity of introduced technological processes increased by 25% during 2009–2010. However, in 2012 comparatively with 2010 the amount of implemented technological processes decreased by 40%. The maximum amount of technological processes was introduced by enterprises which are engaged in the production of electric, electronic and optical equipment.

Table 3 presents the quantity of innovative output of machine-building enterprises of Lviv Region during 2009–2012.

Innovative products can be worked out for the first time both for an enterprise and for a market. As a result, the data concerning the development of innovative products which are new for a market is estimated. Taking into account the indicated information, in 2012 by comparison to 2009 there is implicit reduction of quantity of realization of innovative products by 93,6 %. It can be explained by the fact that the machines-building and equipment production enterprises realized their innovative products only for 208,9 thousand hryvnyas more, enterprises which specialize in production of electric, electronic and optical equipment - for 3687,1 thousand hryvnyas more, however the organizations specialized in the production of transport vehicles and equipment rapidly decreased realization of innovative products for 168547,4 thousand hryvnyas.

Now we will analyze the dynamics of realization of innovative products, which are new for an enterprise. Machine-building enterprises most realized innovative products in 2010, that was for 150983,4 thousand hrn. However in 2012 there may be noticed the reduction of products realization for 140972,8 thousand hrn. Such reduction of quantity of realization of innovative products can be explained by the fact that enterprises specialized in the production of machines and equipment realized innovative products for 1967,3 thousand hrn. less, enterprises specialized in the production of electric, electronic and optical equipment for 36299,3 thousand hrn. less, moreover the organizations specialized in the production of transport vehicles and equipment sharply decreased the realization of their innovative products for 102706,2 thousand hrn.

Conclusions. On the basis of research of innovative activities of machine-building enterprises of Lviv Region we may draw the

conclusion that diversification measures can be analyzed on the basis of the amount of introduction of technological processes, mastering of productive and technical innovations and production of goods, that can be new for a market or enterprise. It is advisable to emphasize that due to the introduction of diversification as motivation for the development of innovative activities of organizations the increase of their competitiveness in internal and foreign markets can be observed. It induces enterprises to join an international market, to increase their profit and to ensure the scientific and technical development of our country.

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EXPENDITURES ALGORITHM FORMATION ON EXPORT ACTIVITIES BASED ON ECONOMIC ENTITY INVOLVEMENT STAGES TO FOREIGN MARKET

Ó Chernobay L. I., Vatsyk N. Ja., 2014

Abstract. This article provides a detailed analysis of Infographic Association Agreement with the EU in the context of the author's approach, manly a series of export activity involves separation of the four stages of economic entity involvement to external market (the stage of initial involvement to a foreign market; export activity increase stage; stage of export activities full formation and stage of the company export reduction). The algorithm of expenditures on export activities based on stages of economic entity involvement to foreign market using software Statistica was designed. An example of such an algorithm for JV "Spheros-Electron" and PC "Promprylad" is exemplified which allows to identify expenditure composition and the factors that influence the formation of such expenditure in a particular stage of involvement, to identify their level of influence identify the key expenses, to calculate the rate of total expenditure on each stages and build a functional relationship between the amount of expenditure and efficiency levels of exports for the next period.

Key words: economic entities remains export, algorithm formation on export, foreign market.

Statement of a problem. In the current environment of uncertainty and dynamic development environment, as well as in installation and configuration of relations with the European Union (EU) one of the priority and promising areas of domestic economic entities remains export.

However, as it was mentioned in our previous publications, this interpretation does not cover the totality of other issues related to manufacturing and exports production services, and therefore, accordingly, it does not answer the question concerning expediency of exports and the size of the potential benefits that the exporter receives in the case of products intended for export.

Also, according to this interpretation leadership of economic entity does not receive information on the actual amount of incurred expenses and complete data for full price of consumption. Therefore for an economic entity with a full or partial production cycles implementation of this approach to the interpretation of exports is inappropriate. Consideration of exports in the light of possible operations is only for selling company or intermediary organizations that do not participate directly in the process of manufacturing, after-sales service and exports production disposal. Exports should be seen as a type of economic activity that is not possible without implementing of complex operations based on the four phases of the export products production cycle (preproductional phrase, productional, realization and phase of postrealization maintenance and disposal) and stages of economic entity involvement to the external market as an integral characteristics of export activities. Logical that such an activity like any other activity entity provides aggregate incurred expenditures, the composition and size of which depends on the specifics of its operations and stage of involvement. However, it should be mentioned that the formation of expenditure on export activities will be identical for all economic entities with full or partial production cycles, regardless of activity (the only changes are in composition of the expenditures, on export activities and key expenditures, of such activities). Therefore particularly relevant today is not only the identification of the nature of expenses for export but to determine their typology, positioning of such expenditures among other economic entity expen-

ditures and it is also appropriate to design algorithm of expenditures stages involving foreign market based exports cycle activity.

Analysis of recent research and publications. A large number of domestic and foreign scholars are dealing with expenditures formation, including export actyvity. Among them, it is advisable to allocate works of F. Gunther, John Zimmerman, M. Minor, A. Morrison, L. V. Bazaliyeva, Y. M Velykyyi, A. M Vichevych, P. A Havrys, A. P Grechan, M. G Hreschak, N. V Grishko, I. E Davidovich, G.M Zaharchyn, U.I Kohut, R. O. Kostyrko, A. V Maksymets, V. M Panasiuk, G. A Partyn, Y. M Petrovyuch., L. V. Popovic, V. V. Prokhorov, T. V Sklyaruk, Y. S Tsalko-Tsalko, L. G Tsymbaliuk A. V Cherep, A. I Yasinska etc.

However, the issue of expenditures algorithm constructing on export activities in terms of entity involvement stages to foreign markets is studied not enough in theoretical and applied aspects.

Article aims. The aims of this article are:
– Infographic analysis to conclude Ukraine Association Agreement with the EU in spending on export activities;
– Export activities expenditures algorithm development including stages of economic entity involvement to foreign market;
– Realization of developed algorithm is made on example of CP Ltd. "Sphera-Electron" and PC "Promprylad";

The main material of research. Signature of the Economic Association Agreement with the EU in June 27, 2014 is one of the factors that stimulates and activates the export activity of domestic economic entities. That is why it is an economically justified decision on export activity expenditures formation and analysis of the potential obtained benefits in case of such proceedings under this agreement, is extremely important. Export activity [2, p. 7-8; 3, p. 7-9] involves four stages of economic entity involvement to external market (the stage of initial involvement to a foreign market; stage of export activity increase; stage of enterprises export formation and stage of company export reduction), they all together form a complete (full) cycle of

exports activity. The infographics will be analyzed that were posted on the Internet website [1], in the context of the author's approach:
– access to most of the world markets through the introduction of EU standards in Ukraine. This will allow domestic economic entities to minimize the initial stage of involvement in temporal perspective, but it may lead to a sharp increase in expenditures. In its turn activates a mechanism of export activity diversification, expenditures optimization for it, and decrease the transition probability to the stage of export activity reduction as the final stage of the cycle such activities through the sale of surplus product or products which is under recession according to the concept of product life cycle, in market in which demand exceeds supply these products for which there is no considerable need adaptation or modification in existing exporter production. Thus, using the proposed, idea of export activity separation cycle stages of involving to foreign market, the domestic economic entity receives a competitive advantage for the restructuring possibility of its export activity according to each stage; optimization of the expenditures structure for export activity; determine the required number of resources; strategy selection for implementation export activities; identify possible options for the development of such activities; pros and cons of the enterprise, potential opportunities and threats to the environment and so on. This in combination allows domestic economic entities do not hesitate to start operations in the foreign market and avoid the most common mistakes;
– optimization of domestic products to EU requirements, which makes contribution to the national economy modernization and enables potential exporters realization of manufactured products to foreign markets of most countries without additional certification. It eliminates the negative impact under non-tariff barriers as one of the factors limiting access to new markets through the introduction of common technical regulation of production and approval of legislation on sanitary and phytosanitary measures. Thus, according to the proposed concept review export activity based on export production cycle and stages of involvement economic entity to a foreign market it is made to optimize the structure and size of expenditures on

export activities at all stages of involvement according to the developed matrix of expenditures occurrence on export activity [2, p. 9]. In particular, the expenditures value on certification of products will be reduced according to international standards as one of the expenditures elements for presale export production which arise on implementation phase. It Is well known that the process of certification is costly, as it involves attracting more number of employees and other organizations and a number of activities which are prior to obtaining a certificate of compliance and license to use it (submission of required documentation, its consideration and analysis, inspection, certification of production depending on the chosen scheme (model) of certification, certification testing, analysis of the results, the publication of a certificate and license to use such a certificate, technical supervision of certified products, etc.). Therefore, by reducing the amount of expenses for certified products will help simplify and speed up the economic entity to foreign markets and it will reduce the duration of a stage to attract and speed up the transition from one stage to another (possible options for the transition from one stage to attract foreign market to another presented in [3, p. 8]);

– abolition of state standards and specifications. This benefit is an undoubtful advantage and activation factor for medium-sized enterprises with high export potential, as it helps to simplify the products certification procedure and setting lower prices for domestic products. This in turn stimulates a number of domestic economic entities to review export activity as one of the promising areas of business development;

– reduction or elimination of import duties on products to EU countries according to developed charts. It should be mentioned that "for Ukraine the transition period will last up to 10 years, while the EU tariff schedule change will take place after the entry into force of the agreement, and a gradual reduction will apply in relation to the base duty rates that is fixed in the agreement"[4]. For example, engineering products advalorem import duty rate reduced from 2.8% to 0.4%, while for the EU – from 2.0% to 0%. [4]. Significant reduction in tariff barriers to EU domestic producers, including engineering, will facilitate

activation of export activity, enhance market access of certain EU countries, facilitate the release of new economic entities in foreign markets, accelerate the transition from one stage to another and also enhance the competitiveness of products due to the possibility of establishing lower price. According to the agreement for the engineering industry the tariff quotas will not be applied and it will allow domestic exporters to sell their products in unlimited quantities without raising the price of it (scale effect), in case there is demand for such products;

– enhance of consumer protection by introducing European standards of quality control is indirect benefit for local economic entities, as it stimulates domestic producers to manufacture better products with less percentage of marriage and increases the competition between both the domestic and foreign markets. Separation of these benefits is appropriate to consider the position of export activity as a cycle of manufacturing export production and consideration production phase and production expenditures on export production as one of the key expenditures in system expenditures for export activities. Thus, under modern conditions the concept that was proposed is extremely important and necessary from a practical point of view;

– simplification of procedures and the VAT return. According to Article 200 of the Tax Code of Ukraine regulates order of determination VAT refund and the probable time of calculation that is 30 calendar days from the date of presentation of documents on actual sales outside the customs border of Ukraine and calculations on the amount of the export refund from the budget. However, it is generally known that in Ukraine there is a considerable export VAT refunds debt and the procedure itself is quite complex and involves the emergence of a number of formalities only after which it is possible to submit conclusion to the State Treasury of Ukraine stating the VAT refund, including: procedure for filing tax returns and statements to obtain compensation; detailed calculation of VAT refund; presence of the original customs declarations; conduct cameral tax audits within 30 days; probability of documentary unscheduled audit of taxpayer for authentication charging of certain VAT refund [5]. All these

nuances complicate and delay time process of VAT refunds from the budget and require corresponding changes in tax legislation of Ukraine, which is possible due to signing of the agreement. Simplification of procedures under the agreement contributes to the efficient return of VAT on export procedures and improves its return.

Another indisputable advantage is that the process of entering the foreign market of certain product, company or industry will not last more than 1.5 years, which is pursuant indicates the optimistic strategy selection variant for export activity of the economic entity based on scenario approach [3, p. 385–387].

The application of the new requirements under the Association Agreement indicates the need to consider domestic enterprises production phase as a key element of exports as well as export consideration not only from the standpoint of transfer of ownership of the products, but from the position of export production manufacturing cycle.

Overall, all benefits received after agreements ratification will facilitate activation of domestic enterprises in the export. Economic ground of the activation can be considered as expenditures formation on export activities which are based on the stages of the economic entity attraction to foreign market as a universal approach to all domestic enterprises, including engineering.

As mentioned earlier, the export activity involves four phases of the production cycle (preproductional phrase, productional, realization and phase of postrealization maintenance and disposal) that are implemented at certain stages of the economic entity involvement to the foreign market. In its turn export activity is assessed by number of indicators, among which expenditures are prominent. Formation of expenditures on export activities, that we offer, take into account the stages of involvement in a foreign market that allows to company management not only affect the amount and composition of these expenditures, but also to coordinate current (at each stage of export activity in particular) and strategic (within a cycle of export activity) goals.

Algorithm of expenditures formation on export activity based on economic entity involvement stages to foreign markets is universal tool that will be used at any stage within the cycle of export activity and for each economic entity, regardless of the type of ownership, type of

organizational structure, etc. and will also include a sequence of expenditures occurrence on export activity according to a standard matrix of such expenditures depending on the stage of economic entity involvement to foreign market based on the phases of the production cycle [2, p. 9]. Application of this algorithm allows domestic entities to identify the moment and sequence of the certain groups of expenditure occurrence on export activities, identify their key elements in order to calculate overall cost-effectiveness level of export activity and also enable harmonization strategy of such activities within a stage attraction to the external market.

According to the definition given in the explanatory dictionary of the Ukrainian language, the algorithm is "a set of rules for calculating process that leads to the solution of a certain class of problems after a finite number of operations" [6, p. 24].

It should be mentioned that the structure of the algorithm is identical for all economic entities. However, it is possible to change the expenditures to the export activities in the expenditures matrix taking into account certain enterprises specific activities (type of product, the method of functioning in the foreign market, the involvement of other organizations, the application of certain rules of INCOTERMS, the number of foreign markets or market segments, etc.).

Algorithm of expenditures formation on export activities taking into account stages economic entity attraction to foreign market is represented in Figure. Let's consider all elements of the proposed algorithm. The first block of algorithm of expenditures formation on export activities taking into account stages of economic entity attraction to foreign market involves a preliminary stage to identify a particular economic entity in accordance with the export activity cycle [3, p. 8].

The next item involves identifying key characteristics of qualitative and quantitative feature stages of attraction to foreign market, namely the length of the stage, the strategy of functioning in the foreign market, aims to attract foreign market, main economic indicators, etc. [3, p. 8].

The next item involves identifying key characteristics of qualitative and quantitative feature stages involving foreign market, namely the length of the stage, the strategy of the foreign market, aims to attract foreign market, main economic indicators, etc. [3, p. 8].

Identification of the expenditures to export, as the following element of the proposed algorithm of such expenditures is to detect groups of expenditures on export activities and their elements according to complete export production manufacturing cycle. The results are recorded in expenditures occurrence matrix on export activity depending on economic entity involvement to foreign market based on the phases of the production cycle [2, p. 9]. It should be mentioned that this matrix is the basis for all economic entities. However, this does not mean that the list of expenditures grouped in this matrix is not exhaustive and may be supplemented or reduced. It is possible to change the composition of expenditures on export activity, because it depends on the number of phases in the export production manufacturing cycle, attracting foreign organizations or individuals in the manufacture, sale and service of products for export, the application of certain rules of INCOTERMS, the specifics of economic entity performance, etc.

Based on results of the export activities iden-tification of expenditure composition in a particular stage of involvement to external market the number factors were defined for internal and external environments that influenced the formation of such expenditures. Detailed list of factors shaping the expenditures of export activities presented in [7, p. 126-132]. The proposed factors are the result of generalizations based on analysis and systematiza-tion of literary sources. In its turn, presented groups of factors are aggregated and can include many additional factors, depending on the specifics of a particular economic entity and market conditions.

It should be mentioned that the process detection of certain factors that influence the formation of expenditure on export activities is based on a survey of expert groups on a pre-designed questionnaire [3, p. 434-438].

Identification of involvement stage to foreign market, key features and characteristics of this stage, composition of expenditures on export, as well as the factors influencing the formation of such expenditure which were provided for creation of the optimal data base as the next element of the proposed algorithm. MS Access will be used as tool of formation and content of information database and it will cover the main indicators of export of the entity during a specified time period.

Detailed description of the information formation of database is presented in [3, p. 314–323].

The next step of the proposed algorithm is expert evaluation of factors influence the formation of expenditure on export activities of the economic entity, depending on the stage of involvement to foreign market using three point scale (3, 2 and 1 points – respectively high, medium and low degree of influence of certain factors on expenditure formation on export activities). Conducted questionnaire survey of managers at different levels makes it possible to identify the significant influence of certain factors on a certain stage of involvement a foreign market by the sum of ranks. The number and qualifications of the experts involved depends on the existing phases in the cycle of manufacturing production export.

Calculation of the factors shaping the expenditures on export activity on the basis of the actual amount of data is made by using MS Access and it is based on expenditure structure and value of such activities, the involvement stage to the external market and the factors shaping the average rank of expenditures for export activities. The resulting information covers a large amount of data that needs to be grouped by building PivotTable using MS Excel. Data summary table should be normalized in order to bring an array of infor-mation to another normal form by discarding unne-cessary values. An example of the normalization procedure is presented in [3, p. 328–330].

The normalized value factors in the expenditures formation on export activity at a certain stage of the economic entity involvement to foreign market is the basis for statistical data processing using software Statistica using the factor analysis module, mainly: the method of principal components. This method helps to optimize the number of factors in the expenditures formation on export activities, identify key factors and costs that are influenced by these factors. Matching results of factor analysis to certain criteria (Kaiser Criteriaa, the matrix of factor loadings) make it possible to determine the rate of total expenditure on export activity as the sum of core costs of such activities on each of the four stages of the proposed economic entity involvement to the external market. In case of discrepancy of the results established criteria should be correction parameters using a different set of data during analysis.

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| Preliminary identification of economic entity involvement stage to foreign market according to the cycle export activity |

| Determination of the main characteristics, quality and quantitative features of economic entity involvement stage to foreign market |

| Identification of expenditure composition on export activities |

| Identification of influence factors on export activities expenditure formation |

| Formation and content of the informational database |

| Expert evaluation of the expenditure formation influence level factors on export activities, taking into account stage of involvement in a foreign market |

| Evaluation level of consistency and opinion uniformity of some experts by calculating standard deviation and variation coefficient |

| Parameters adjustment |

Do the the estimated figures indicate the uniformity of expert opinion? — No / Yes

| Calculation of the factors which shape the export expenditures on the basis of the actual amount of these expenditures and normalization of their values |

| Implementation of factor analysis (principal components method) to reduce the dimensionality of export activities expenditures shaping factors and their key elements determination |

| Interpretation of the results using the Kaiser criterion |

The value of the Kaiser criterion to determine the key components? — Ні / Так

| Interpretation of the results using the matrix of factor loadings |

| Designing of relationship matrix between factors of influence on expenditures formation on export activities and composition of such expenditures |

Matrix elements allow to reveal density relation between variables and principal components? — Ні / Так

| Determination of total expenditures on export activity as the sum of key expenditures |

| Application of discriminant analysis to identify stage of involvement in a foreign market |

The matrix elements allow to reveal key expenditures formed under the influence of key factors? — Ні / Так

| Determination of parameters of discriminant analysis (grouping variable – the stage, a list of independent variables – expenditures on export activities, the value of F-test statistics and Wilks lambda) |

| Designing of classification functions to predict values expenditures on export activities |

New observations allow to switch to another stage? — Так / Ні

Do correctly classified certain expenditures on export activity to a certain stage of involvement? — Ні / Так

| Opinion formation concerning the level of expenditure on export activity, switching to another stage and the basis for the current planning |

Are options of discriminant analysis satisfactory? — Ні / Так

Expenditures Algorithm design on export activities in stages of involvement to foreign market*
* developed by the authors

Table 1

Summary table of results of algorithm formation on export activities for JV "Spheros-Electron" and PC"Promprylad"*

Name of the enterprise	Cycle of export activity	Stages of involvement to a foreign market	Duration of stage, years	Income (loss) from sales of export production, thousand, UAH.	Income from of export activity, thousand, UAH.	Total expenditure on export activities, thousand, UAH.	The level of efficiency of export activity	Significant influence factors of the expenditures formation on export activities	Sum of ranks according to the expert survey	Standard deviation	Coefficient of variation,%
1	2	3	4	5	6	7	8	9	10	11	12
JV "Spheros-Electron"	Partial (1,2,3 stage)	Initial stage of involvement to foreign market (2004-2006 years)	2004	18763,92	1573,315	17190,605	0,09	Method of involvment to foreign markets	27	5,62	31,91
			2005	29649,96	2288,88	27361,075	0,08	Organizational and operational factors	27		
								Managerial quality of employees	26		
			2006	38824,43	5434,465	33389,965	0,16	Different kinds of resources availability	26		
		The increase of export activity (2007-2009 years)	2007	52082,73	9960,98	42121,75	0,24	Organizational governance structure of export activity	22	3,91	20,68
			2008	56198,6	10251,8	45946,8	0,22	Suppliers	27		
								SP	27		
			2009	12640,35	-382,75	13023,1	-0,03	Socio-cultural conditions	27		
		Formation stage of export activity (2010-2012 years)	2010	34865,3	5631,23	30301,5	0,19	Objectives of export activity	24	6,52	32,28
								Marketing Strategy	28		
								The level of control over the export operations	27		
			2011	40650,4	7435,8	34482,38	0,22	Consumers	24		
								Competitors	26		
								State authorities and legislative acts	26		
			2012	50367,94	9681,585	41983,695	0,23	Infrastructure	25		
								Peculiarities of international relations	25		

Continuation of table 1

1	2	3	4	5	6	7	8	9	10	11	12
PC"Prom-prylad"	Partial (1,2,3 stage)	Initial stage of involvement to foreign market (2005-2007 years) 3	2005	1504,096	-52,805	1556,901	-0,034	Method of involvment to foreign markets	27	5,51	31,39
			2006	2278,597	22,024	2256,573	0,010	Organizational and operational factors	26		
								Managerial quality of employees	26		
			2007	2056,044	109,261	1946,783	0,056	Different kinds of resources availability	26		
		The increase of export activity (2008-2010 years) 3	2008	2254,009	485,473	1768,536	0,275	Organizational governance structure of export activity	23	5,3	23,65
								Consumers	23		
								Suppliers	27		
			2009	906,397	198,697	707,7	0,281	State authorities and legislative acts	23		
								SP	27		
			2010	1176,877	280,859	896,018	0,313	Socio-cultural conditions	27		
		Formation stage of export activity (2011-2012 years) 2	2011	666,868	114,711	553,27	0,207	Structure	26	7,11	32,04
								Marketing Strategy	26		
								The level of control over the export operations	26		
			2012	1580,209	175,636	1405,913	0,125	Consumers	26		
								Infrastructure	27		
								International events	27		
								SP	27		
								Socio-cultural conditions	26		
								International relations	27		

*Formed by the authors on the basis of the calculations

Таблиця 2

Summary table of results of factor and discriminant analysis as part of the expenditures algorithm formation on export activities for JV "Spheros-Electron" and PC"Promprylad"*

Name of the enterprise	Cycle of export activity	Stages of involvement to a foreign market	Results of factor loadings factors shaping the expenditure on export activities based on stages of involvement to a foreign market			The integral indicator of expenditure on export activities, taking into account stage of involvement to a foreign market	Results of discriminant analysis of economic evaluation expenditure on export activities	
			1 component	2 component	3 component		The variables that included in the model	Functions classification based on stage of involvement to foreign market
1	2	3	4	5	6	7	8	9
JV "Spheros-Electron""	Partial (1,2,3 stage)	The initial involvement to foreign market	1,2,4,13	5,12,19	-	$I_{B_{1om}} = x_5 + x_7 + x_8 + x_9 + x_{10} + x_{11} + x_{12} + x_{13} + x_{17}$	3,4,5,7,8, 9,10,11, 13,17,21	$G_1 = 0{,}114 Var_{11} + 0{,}149 Var_9 + 11{,}498 Var_3 + 0{,}086 Var_5 - 0{,}796 Var_{17} + 0{,}484 Var_7 + 2{,}117 Var_8 - 577{,}380 Var_{21} + 0{,}005 Var_4 + 0{,}269 Var_{13} - 1{,}558 Var_{10}$ $Const = -77{,}886$
		The increase of export activity	1,2,3,4,5,9, 10,12,13,14, 15,19	-	6	$I_{B_{2om}} = x_5 + x_6 + x_7 + x_8 + x_9 + x_{10} + x_{11} + x_{12} + x_{13} + x_{14} + x_{15} + x_{16} + x_{17}$		$G_2 = 0{,}037 Var_{11} + 0{,}084 Var_9 + 16{,}667 Var_3 + 0{,}028 Var_5 + 0{,}802 Var_{17} + 0{,}587 Var_7 + 1{,}954 Var_8 - 546{,}650 Var_{21} + 0{,}005 Var_4 + 0{,}198 Var_{13} - 1{,}858 Var_{10}$ $Const = -63{,}966$
		Formation of export activity	5,8,9,11, 14,16	6,7,13	-	$I_{B_{3om}} = x_1 + x_2 + x_3 + x_4 + x_5 + x_6 + x_7 + x_9 + x_{14} + x_{15} + x_{16} + x_{17} + x_{18}$		$G_3 = 0{,}031 Var_{11} - 0{,}064 Var_9 + 17{,}866 Var_3 - 0{,}070 Var_5 + 2{,}127 Var_{17} + 0{,}974 Var_7 + 1{,}215 Var_8 - 257{,}649 Var_{21} + 0{,}003 Var_4 + 0{,}109 Var_{13} - 1{,}220 Var_{10}$ $Const = -46{,}444$

1	2	3	4	5	6	7	8	9
PC "Prom-prylad"		The initial involvement to foreign market	5,12,15,19	8	9,10	$I_{B_{1em}} = x_3 + x_4 + x_5 + x_7 + x_{11} + x_{13} + x_{15}$	3,4,5,7,8, 10,11,12, 13,17,21	$G_1 = 594,593\,Var_{10} + 7,075\,Var_3 + 38,533\,Var_8 - 73,288\,Var_{21} - 28,604\,Var_7 + 10,826\,Var_{17} - 152,170\,Var_{11} + 0,105\,Var_4 + 113,118\,Var_5 + 155,914\,Var_{13} + 3,439\,Var_{12}$ $Const = -172,688$
	Partial (1,2,3 stage)	The increase of export activity	1,2,3,4,5,9, 10,12,13,14, 15,19	-	6	$I_{B_{2em}} = x_5 + x_6 + x_7 + x_8 + x_9 + x_{10} + x_{11} + x_{12} + x_{13} + x_{14} + x_{15} + x_{16} + x_{17}$		$G_2 = 287,9868\,Var_{10} + 11,8006\,Var_3 + 18,6424\,Var_8 + 93,8296\,Var_{21} + 18,2607\,Var_7 + 2,7356\,Var_{17} - 95,7622\,Var_{11} + 0,0666\,Var_4 + 65,9867\,Var_5 + 124,6535\,Var_{13} + 2,9293\,Var_{12}$ $Const = -83,2832$
		Formation of export activity	1,2,3,4,5,7,9, 10,12,14,15, 18,19	11,16	8	$I_{B_{3em}} = x_1 + x_2 + x_3 + x_4 + x_5 + x_6 + x_7 + x_8 + x_9 + x_{10} + x_{11} + x_{12} + x_{13} + x_{14} + x_{15} + x_{16} + x_{17} + x_{18}$		$G_3 = 144,4096\,Var_{10} + 5,0879\,Var_3 + 8,851\,Var_8 - 136,1878\,Var_{21} + 8,1657\,Var_7 + 0,8640\,Var_{17} - 51,2479\,Var_{11} + 0,0387\,Var_4 + 42,3325\,Var_5 + 60,4393\,Var_{13} - 1,7248\,Var_{12}$ $Const = -27,5311$

* Formed by the authors on the basis of the calculations

Notation conventions:

1 purposes of export activity; 2 way of involvement to foreign markets; 3 structure; 4 organizational factors; 5 marketing strategy / objectives; 6 level of control over export operations; 7 technology; 8 production factors; 9 workers; 10 Quality of managerial employees; 11 supply various kinds of resources; 12 consumers; 13 vendors; 14 competitors; 15 public authorities and legislative acts; 16 infrastructure; 18 NTP; 19 social and cultural circumstances;

– R & D expense in the period;

(Var3) – expense in the period in invention and rationalization;

(Var4) – the cost of production of export production, ;

(Var5) – the cost of a comprehensive study of the external market;

– Presentation costs;

(Var7) – the cost of an advertising campaign in the foreign market;

(Var8) – the cost of preparation of export production, to shipment;

(Var9) – storage costs;

(Var10) – the cost of preparing the export of goods to be shipped;

(Var11) – the cost of registration of export activity, preparation, execution and conclusion ZTK;

(Var12) – the cost of transportation of exported products;

(Var13) – the cost of cash management services;

– The cost of changing its management structure;

– The cost of maintaining export department, sales representatives, affiliates and subsidiaries;

– The cost of control over the implementation of the export transaction;

(Var17) – the cost of certification of export production. ;

– The cost of repair, after-sales service;

Var21 – the efficiency of export of the company.

Determination of total expenditure on export activities at each stage of involvement in a foreign market is the basis for discriminant analysis to determine the probability of stage attraction identification, attribution of certain expenditures to a particular stage, and to predict the values of expenditures that will arise in the next time intervals, and thus determine the time of transition to another stage of involvement.

If discriminant analysis parameters are satisfactory the probability of switch to another stage of the economic entity involvement to foreign market within a cycle of exports will be determined.

If there is no switch a summery on the level of expenditures on export activities and the basis for planning future export activities in terms of a certain stage of involvement to a foreign market will be made. It should be mentioned that the algorithm design and its practical application is crucial under modern conditions based on the results of the research it was found that for certain groups of information users false impression to identify certain key expenditure on export activities at some stage is included, and well as the formation rate of total expenditure of such activities. Therefore, clarification of key expenditure selection process on export activity using the algorithm is particularly relevant. It should be also emphasized that the totality of the key expenditure on export activity for each economic entity will depend on the factors influencing the formation of such expenditure, vector impact of these factors, the results of expert evaluation, the proportion of certain expenditure elements in export activities in the total expenditures structure, stage of involvement to external market, strategy of activity in foreign markets and so on.

Applied aspects of expenditure algorithm on export activities in involvement stages to foreign market is provided for Ltd "Spheros-Electron" and PC "Promprylad" for which the presence of a partial cycle of export production manufacturing is typical. The result of the proposed algorithm is presented in Table. 1 and 2.

Application of the developed algorithm for expenditures on export activities in involvement stages to foreign market on in two analyzed companies allowed to identify the expenditures and the factors that influence the formation of such expenditures in a particular stage of involvement, to identify their level of exposure, identify the key expenditures, calculate the rate of the total cost of each stages and design a functional relationship between the amount of expenditures and efficiency levels of exports for the next period. The application of developed algorithm in practice is the basis for further export planning of economic entity.

Conclusions and perspectives of research. Using the proposed algorithm in practice allows the management of an economic entity to identify important factors that influence the formation of expenditure on export activities, key expenditure of such activities at some stage involvement in a foreign market, and the point of transition to the next stage, which ultimately will help increase the efficiency of export activities as strategic and operational planning and more. In further research is planned to investigate the behavior of costs on export activities within a particular stage of involvement in a foreign market.

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