

ASERS

Journal of Environmental Management and Tourism

Biannually

Volume VIII

Issue 7(23)

Winter 2017

ISSN 2068 – 7729

Journal DOI

<http://dx.doi.org/10.14505/jemt>

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ISSN 2068 – 7729
Journal DOI: <http://dx.doi.org/10.14505/jemt>

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DOI : [http://dx.doi.org/10.14505/jemt.v8.7\(23\).06](http://dx.doi.org/10.14505/jemt.v8.7(23).06)

Diagnosics of Monetary Assets of Ukrainian Agribusiness Entities: Relevance, Peculiarities, and the Process of Algorithm Construction

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Suggested Citation:

Nazarenko, I., Oriekhova, A. (2017). Diagnosics of Monetary Assets of Ukrainian Agribusiness Entities: Relevance, Peculiarities, and the Process of Algorithm Construction. *Journal of Environmental Management and Tourism*, (Volume VIII, Winter), 7(23): 1373-1380. DOI:10.14505/jemt.v8.7(23).06

Article's History:

Received November 2017; Revised November 2017; Accepted December 2017.
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Abstract:

The purpose of the article is to provide the scientific ground of the organizational and methodological aspects and the construction of algorithm for the monetary assets (including mixed assets) diagnostics for the agrarian entities. The findings are to be based on the complementary synthesis of the dominant principles of the diagnostic process. Their practical implementation will allow a reliable assessment of the assets as well as to identify in a timely manner the influence of the external and internal factors of destructive nature. The application of cognitive economic and mathematical methods will provide a prediction of the financial result, clear definition of prospective managerial initiatives and outline the strategic scenario for the development of agribusiness entities.

Violation of payment discipline, the decrease of funds mobility of Ukrainian agribusiness entities and deterioration of the basic parameters of their financial condition is proven to occur under the current situation.

The necessity of using diagnostics as an efficient management mechanism is substantiated. The algorithm of the diagnostic process of monetary assets (including mixed assets) is developed, which structural decomposition represents the integrity of the preparatory, research and final stages.

Keywords: algorithm; monetary assets; mixed monetary assets; diagnostics; neuron network; principle

JEL Classification: Q 130

Introduction

In the modern dynamic world, the activity of Ukrainian agribusiness entities is rather complicated. Globalization processes, European vector of development, turbulence of the economic system, ambivalence of strategic initiatives at each hierarchical level of management in the agrarian sector of the national economy, destructive external and internal factors, all these factors do not tend to create a favorable platform for a sustainable development of the agrarian economy.

Actually, the current model of agrarian management does not provide solutions of all the socio-economic tasks. Nowadays, the issue of ensuring an investment attractiveness, stable market conditions and competitiveness of the agrarian enterprises is particularly acute. Violations of the calculation and payment discipline, rapid growth of mixed monetary assets create a favorable ground for the emergence of latent risks, which, in turn, reduce solvency, liquidity, business activity of an agribusiness entity, adversely affect the development of its facility and the level of economic security.

Under current conditions, the argumentation of economic development of the agrarian enterprises proves the actuality and necessity of solving the tasks to find the effective management tools for providing the following practical facets:

- tightening the control functions of the managerial process to timely detect the negative factors of external and internal environments, which will affect the level of economic efficiency of the agrarian entities;
- optimizing the structure and sources to form the property of agribusiness entities;
- outlining the strategic initiatives;
- coordinating the implementation of management procedures to ensure the stable functioning of enterprises.

In this context, the necessity of solving the issues related to the formation of the scientific basis, construction of algorithm for the process of monetary assets (including mixed assets) diagnostic with the emphasis on the application of cognitive economic and mathematical methods. Their practical implementation will create an information platform for making effective managerial decisions.

1. Literature review

National and foreign scientists, such as O. Hudz, P. Drucker, K. Zhadko, G. Kramarenko, I. Kryvovyzyuk, T. Kasyanchuk, N. Mayorova, M. Porter, F. Taylor, A. Fayol, I. Khoma and others, considered the solution for various theoretical and methodological as well as applied aspects of organizing the diagnostic process, forming an information platform to outline the issues of strategic management.

Having considered many constructive scholarly papers, it is worthwhile to note a significant number of unresolved problems that require in-depth scientific research. Thus, the economic security of agribusiness entities largely depends on financial and economic stability, which level, in turn, is in direct proportion to the size of monetary assets (including mixed assets). In modern scholarly studios, the issues of enterprise monetary assets' diagnostics are insufficiently studied. Under such conditions, the problem of forming an individual approach to the diagnostics of monetary assets (including mixed assets) becomes particularly relevant.

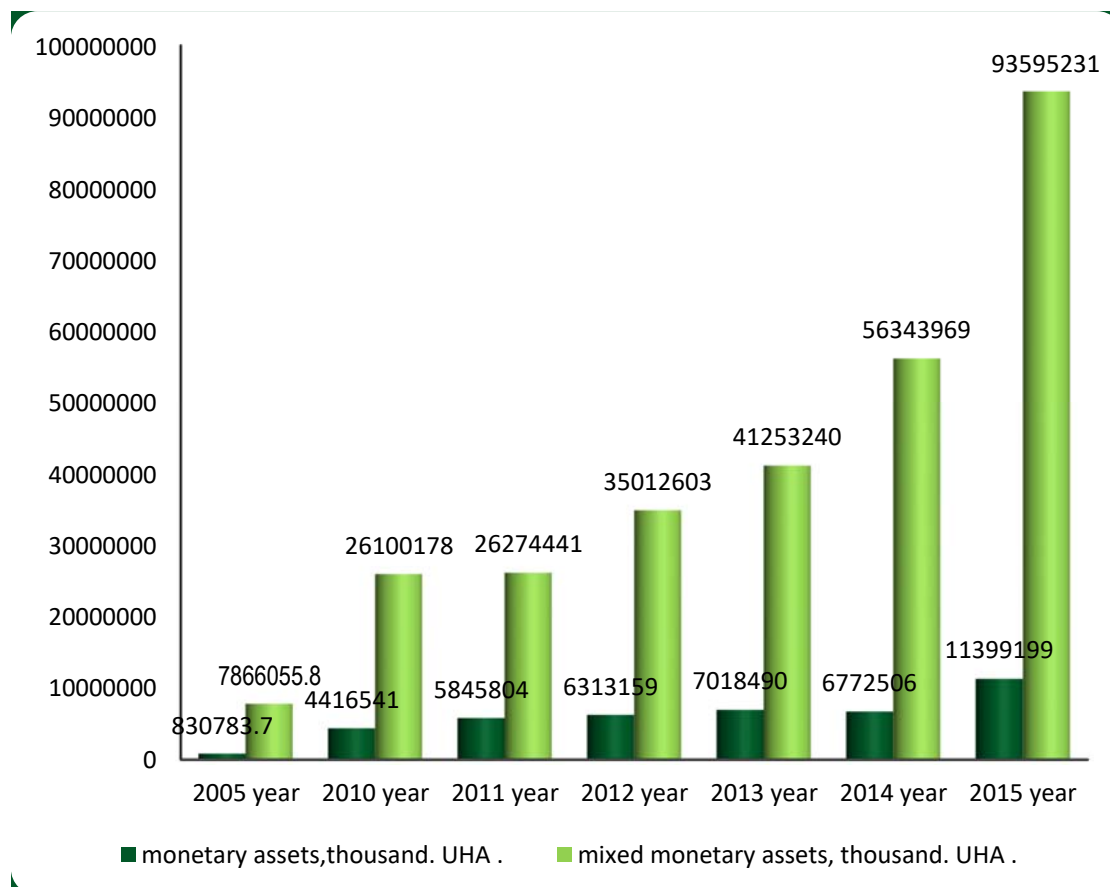
The purpose of the article is to provide the scientific ground of the organizational and methodological aspects and the algorithm construction of the of monetary assets (including mixed assets) diagnostics for the agrarian entities. The findings are to be based on the complementary synthesis of the dominant principles of the diagnostic process. Their practical implementation will allow a reliable assessment of the assets as well as to identify in a timely manner the influence of the external and internal factors of destructive nature. The application of cognitive economic and mathematical methods will provide a prediction of the financial result, clear definition of prospective managerial initiatives and outline the strategic scenario for the development of agribusiness entities.

2. The main results of the research.

Under modern turbulent conditions, the economic development of agrarian enterprises in Ukraine depends on a significant number of factors of the internal and external environment. Accordingly, for a precise determination of the methodology for the diagnosis of monetary assets, it is objectively necessary to take a preliminary assessment of the assets and to use these assets dividing them into groups according to the application of the monetary principle, based on the dominant functions of money – the measure of value and means of payment.

Figure 1 shows the dynamics of the size of monetary assets (including mixed assets) of agribusiness entities in Ukraine.

Figure 1. The dynamics of the monetary assets (including mixed assets) size of Ukrainian agribusiness entities



Source: (compiled by the authors).

During the period under research, the size of monetary and mixed monetary assets of agribusiness entities increased by UAH 10568415,3 thousand UHA and 85729175,2 thousand UAH accordingly. The growth rate of the mixed monetary component is ahead of the growth rate of the monetary component of current assets.

The analysis of the indicators of the of monetary assets use (including mixed assets) in the dynamics over 7 years (Table 1) gives grounds to state that the share of monetary assets in the structure of current assets and in the total size of assets does not differ by specific tendency.

Table 1. Indicators of the condition and use of monetary assets (including mixed assets) of Ukrainian agribusiness entities

Indexes	2005 year	2010 year	2011 year	2012 Year	2013 year	2014 year	2015 year
The share of monetary assets in the structure of current assets, %	2,89	5,32	5,41	4,82	4,99	3,49	3,21
The share of monetary assets in the structure of assets, %	1,40	3,19	3,39	3,09	4,99	2,39	2,37
The share of mixed monetary assets in the structure of current assets, %	27,35	31,42	24,32	26,76	29,33	29,02	26,35
The share of mixed monetary assets in the structure of assets, %	14,62	18,85	15,22	17,12	18,27	19,89	19,47
Ratio of mixed monetary assets turnover, times	4,13	0,56	3,71	3,33	2,86	2,74	2,75
Maturity of mixed monetary assets, days	88	651	98	109	127	133	133
Absolute liquidity ratio	0,06	0,12	0,11	0,11	0,10	0,07	0,05

Source: (compiled by the authors).

Thus, in 2005 the value of the indicator, which characterizes the share of monetary assets in the structure of current assets was 2,89%, and in 2015 – 3,21%. During 2010-2011, the size of this indicator tended to increase. A similar situation arose with the share of monetary assets in the structure of assets of agribusiness entities.

The illustration of the calculations convincingly proves that the share of mixed assets in the structure of current assets tends to slightly decrease, but the tendency to increase is an indicator that characterizes the share of mixed monetary assets in the total value of the property of agribusiness entities (in 2015 – 19,47% vs. 14, 62% in 2005).

The value of the turnover ratio of mixed monetary assets is characterized by volatility and is a negative phenomenon, as it shows a violation of the payment discipline between the business entities.

The conducted calculations show that each year there is a decrease in the mobility of funds of agribusiness entities in Ukraine. The results of the comparison of the value of the financial indicator of absolute liquidity, suggest that the best value was in 2010 (0,12), and since 2011 there has been a steady dynamic trend to reduce the value of this indicator.

Low liquidity of enterprises is caused by loss-making activity, low level of profitability, inappropriate allocation of financial resources; which collectively lead to bankruptcy (Proskurina 2014).

The results of the research suggest that in the current economic realities of the agricultural sector functioning there is a significant increase in operational risks, inhibition of payment transactions, and the decrease of the initial value of money under the influence of inflationary processes. The aforementioned, taken together, reduce the financial indicators of financial and economic performance of economic entities, which, in turn, infringe the success of implementation of the concept of sustainable development of agribusiness entities in a practical way.

The scientific and applied significance of the above-mentioned problems highlights the need for the use of diagnostics as an effective management tool. Its practical use will allow solving a set of issues in different realms: to evaluate monetary assets (including mixed assets) as well as the competitiveness of the enterprise and its financial condition using a powerful instrumental complex; to define gaps in financial management; to identify preventive measures and strategic initiatives.

Thus, it is advisable that the process of monetary assets diagnostics should be based on the complementary synthesis of the following principles:

- purposefulness – diagnostics should provide monitoring, identification of negative factors, threats of the internal environment to the state of monetary assets (including mixed assets) and financial results of activities of agribusiness entities, as well as create a reliable information platform for outlining strategic management initiatives in the context of providing the sustainable development;

- optimality – the diagnostics should be based on the symbiotic use of the optimal number of types of analysis (vertical, horizontal, discriminant, extrapolation, coefficient, comparative, fuzzy logic, regression, trend, etc.), formal and informal methods, simplified and deployed techniques. Their application will ensure the decision of the set purpose and tasks of the research, as well as the implementation of priority diagnostic functions (analytical, informational, identification, preventive and symptomatic);

- logic – the diagnostics of monetary assets (including mixed assets) should be carried out in an algorithmic sequence that represents the unity of the preparatory, research, organizational stages with a clear identification of the steps;

- validity of information base – the information platform for the monetary assets (including mixed assets) diagnostics is the indicator of annual financial statements of the enterprise, real-time accounting information, legislative and regulatory documents, information received from mass media and others;

- limitation of the indicative base – the diagnosis of monetary assets should be based on the use of a measurement system with a clear identification of financial indicators (liquidity, business activity, efficiency, indicators characterizing the cash flow by type of activity, etc.), which are characterized by limited, maximum reliability, objectivity, proportionality in time;

- explicability of the criteria basis – in the process of diagnosing the monetary assets (including mixed assets) one must adhere to the criterion of dividing assets into monetary and non-monetary groups, and the value of the calculated financial indicators (valuation indices) must be compared with the normative values;

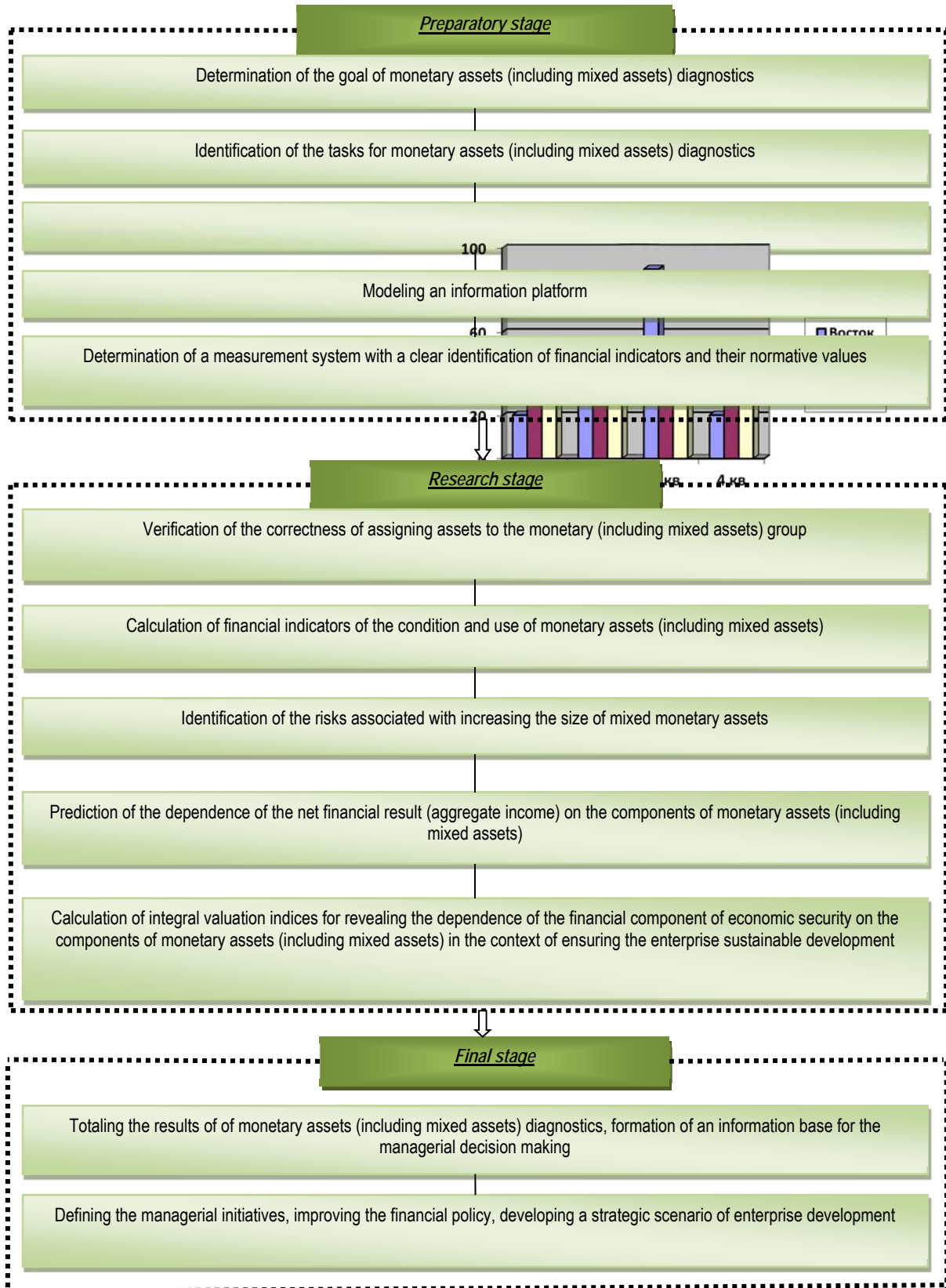
- limited publicity of the results – information based on the results of the diagnosis should be confidential, intended only for the customer, the owner (manager) and limited to a wide range of users;

- completeness – the final stage of the monetary assets (including mixed assets) diagnostics. The following aspects should represent it: totaling of the results of the diagnostic process; a clear definition of managerial initiatives on the issues of security and rational use of monetary assets (including mixed assets); an outline of the measures for improving financial policy (if necessary); working out of the strategic scenarios for the agribusiness entities development.

In this case, the main properties of the diagnostic system should be decomposition, dynamism, emergence, orderliness, integrity, purposefulness.

Based on the basic principles, the next step is the construction of algorithm for the monetary assets (including mixed assets) diagnostics (Figure 2).

Figure 2. Algorithm construction of monetary assets (including mixed assets) diagnostics of Ukrainian agribusiness entities



Source: (compiled by the authors).

It is worthwhile to emphasize that in the recent past, the dominance of mixed, prolonged monetary assets in the structure of current assets of the Ukrainian agribusiness entities is taking place.

Such a situation leads to the shortage of internal current capital, the need to attract additional financial resources from the outside, the growth of credit debts, etc. The crisis of non-payment between enterprises, which has existed for a long time, is the main reason for the loss of solvency and liquidity, and bankruptcy as a result (Proskurina 2014).

Considering the relevance of this issue, further scientific research should focus on determining the impact of monetary assets with a priority emphasis on the mixed component on the financial condition of the economic entity.

To continue the research in this regard, it should be noted that traditional methods of the diagnostic process do not provide management sufficiently with the reliable information resource and do not allow the implementation of etiological diagnosis.

Innovative economics creates a fundamental basis for expanding the outlines of diagnostics by applying the intellectual research methods.

Accordingly, managerial initiatives, strategic decisions should be based on the information obtained from the application of economic and mathematical modeling, which will provide the prediction, establish causal relationships, interdependencies as well as determine the identification of latent risks.

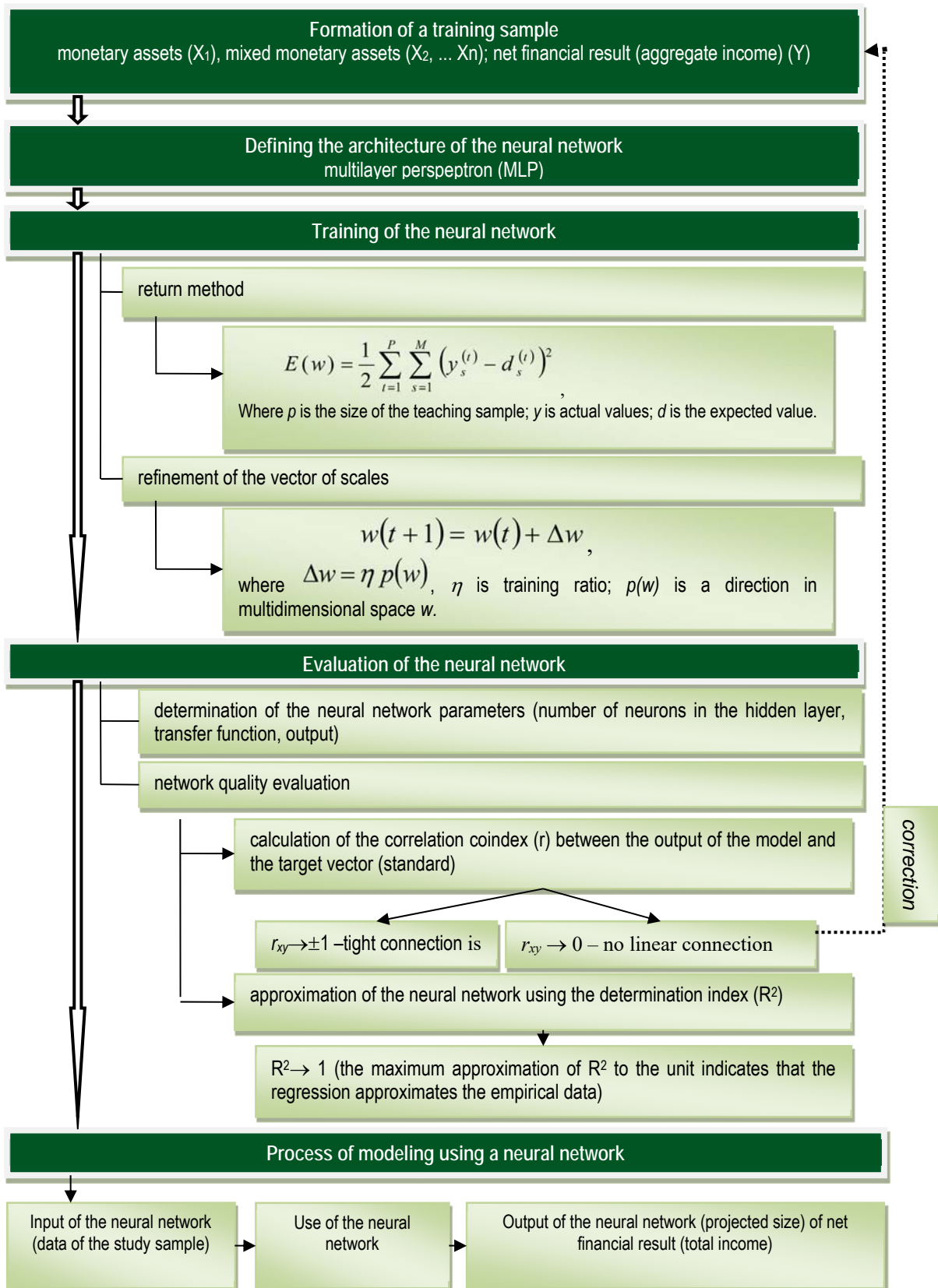
According to O. Y. Hudz the process of financial forecast involves the determination of certain guidelines, criteria, indicators for providing the functioning of agrarian enterprises with sufficient financial resources, optimization of the sources of financial resources attraction and movement of financial flows; distribution and use of profits, minimization of risks, creating the relations with the potential creditors, debtors, state bodies, financial institutions, etc. in order to achieve the desired results of its profitability, solvency, financial stability and efficiency in the coming period (Hudz 2012).

Therefore, the issue of using the neural networks in the process of diagnostics becomes especially relevant. The results of the study give grounds to note that the multilayer perceptron is optimal for the application.

Perceptron type neural network can effectively reproduce the relationship between input/output variables, even in the absence of significant correlations between them, because it can detect linear patterns of development and complex nonlinear functional dependences. This capacity is conditioned by the use of a nonlinear functional converter in neurons, which is described by some activation function. Due to this feature, neural networks get a greater approximating ability to reproduce the initial functional dependencies and predict the further development of the inquired processes (Matviychuk 2010).

Taking into account the peculiarities of neural networks, the model of the neural modeling of the monetary assets (including mixed assets) influence on the financial result of the Ukrainian agribusiness entities in the schematic form is presented in Figure 3.

Figure 3. Model of the neural modeling of the monetary assets (including mixed assets) influence on the financial result of Ukrainian agribusiness entities



Source: (compiled by the authors).

The practical use of neural modeling in the process of diagnosing monetary assets (including mixed assets) will allow to reproduce complex nonlinear dependencies, to systematize factors that have a negative impact on the

financial results of the economic entities, to solve the actual managerial tasks, to obtain an objective information resource. The latter will create a fundamental basis for the development of a strategy aimed at ensuring sustainable development of the enterprise.

Conclusion

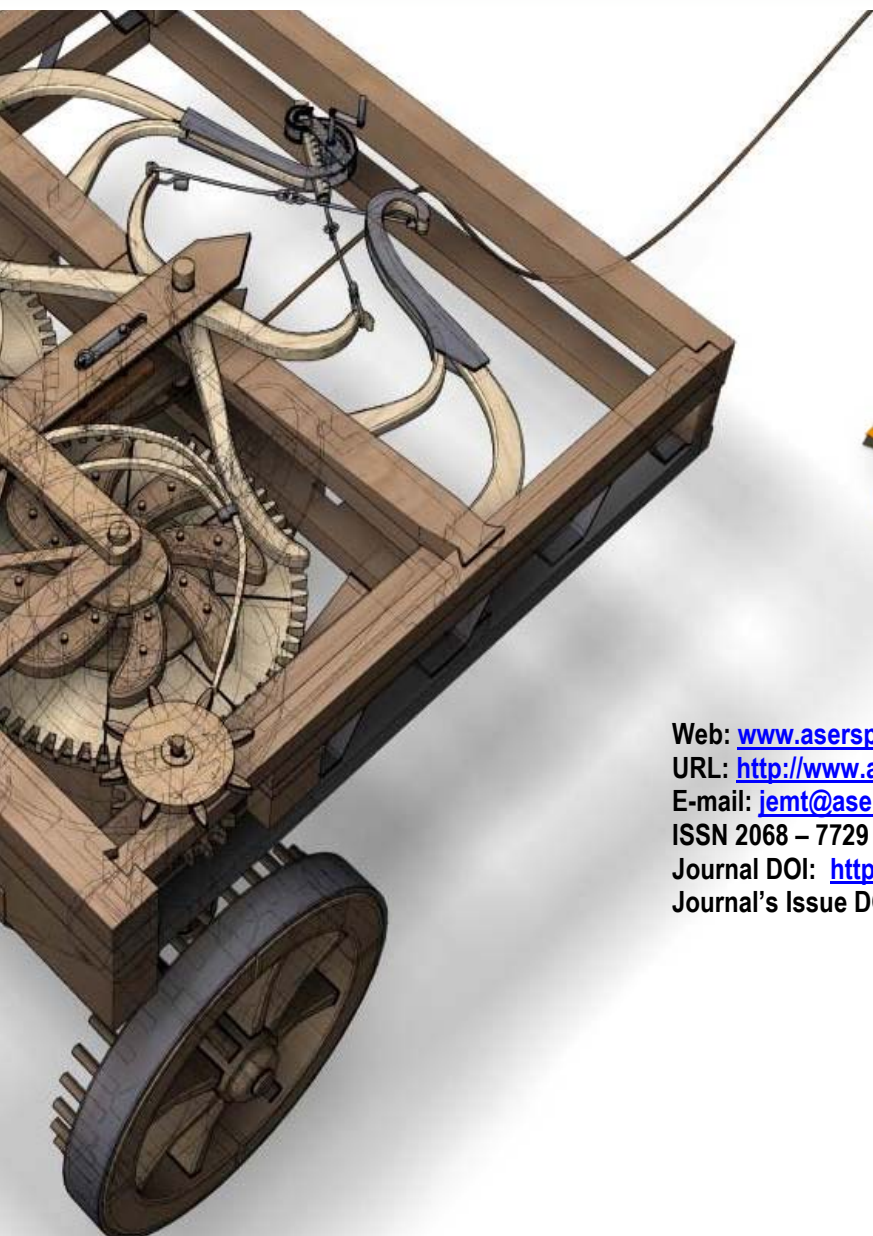
Monetary assets (including mixed assets) play a dominant role in the financial and economic activity of the enterprise; affect the size of its value, business activity, and investment attractiveness. The analysis of statistical data makes it possible to state that in the present situation there is a violation of payment discipline, a decrease in the mobility of funds of the Ukrainian agribusiness entities and a deterioration of the basic parameters of their financial condition. The spread of crisis processes urges the necessity for the use of diagnostics as an effective management tool.

Diagnostics of monetary assets (including mixed assets) should be based on the complementary synthesis of diagnostic principles (purposefulness, optimality, logic, validity of the information base, limitation of the indicative base, explicability of the criteria basis, limited publicity of the results, completeness) and occur in the algorithmic sequence, which structural decomposition represents the unity of the preparatory, research and final stages. Applying the neural modeling of the monetary assets (including mixed assets) influence on the financial result of the agribusiness entities will contribute to the conduct of etiological diagnostics, which results will create a fundamental information platform for the effective managerial initiatives.

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ISSN 2068 – 7729

Journal DOI: <http://dx.doi.org/10.14505/jemt>

Journal's Issue DOI: [http://dx.doi.org/10.14505/jemt.v8.7\(23\).00](http://dx.doi.org/10.14505/jemt.v8.7(23).00)