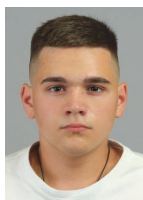# ANALYTICAL SUPPORT IN NON-CURRENT ASSETS MANAGEMENT

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Abstract. In modern conditions, an important role is played by the ability to manage the assets of the enterprise, on which the effective development of production, obtaining the maximum profit, and increasing the competitiveness of the enterprise depend. In order to achieve high results of the enterprise activity, it is important to monitor and analyze the state and the dynamics of the use of assets, to assess their impact on the main performance indicators of the enterprise activity. To do this, it is necessary to have timely and relevant analytical information. That is why, the aim of the study was theoretical, methodological, and practical issues on analysis of non-current assets in the management system of the productive potential development in enterprises.

The study was conducted by the materials of agricultural company Svoboda, Odessa region, Izmail district, the village of Stara Nekrasivka. The company's reporting data for 2000–2019 were used.

During the research, general scientific and applied methods and tools were used, in particular: dialectical method of cognition, analysis and synthesis, system approach (for studying theoretical issues on accounting and analysis of non-current assets); comparison, survey, expert evaluations, coefficient analysis (study of the practice of accounting and analysis of non-current assets); econometric modeling (assessment of the value of non-current assets in the management system of the productive potential development of the enterprise).

The results of the conducted modeling indicate the impact of the value of non-current assets, including fixed assets, the degree of their depreciation on the performance of the enterprise. We consider that for high performance of the enterprise activity, it is important to monitor and analyze the state and the dynamics of the use of assets, to assess their impact on the main performance indicators of the enterprise. To increase the efficiency of formation and use of non-current assets in the analyzed company, it is necessary: to implement all opportunities to increase production, improve its quality, increase competitiveness, ensure a high return on funds and capital investments; to reduce

terms of construction and volumes of unfinished construction; to improve the acquisition of fixed assets, especially in the direction of optimizing the relationship between their individual species, groups.

Keywords: *non-current assets; agricultural enterprise; analysis; management; modeling*

Introduction.

One of the necessary and important factors in increasing the volume and improving the quality of agricultural products is the provision of enterprises with non-current assets. Expansion, maintenance, renewal, modernization, and rational use of non-current assets contribute to the sustainable operation and development of production capacity in agricultural enterprises and thus increase their financial stability, profitability, and competitiveness. The key role in the management system of non-current assets of enterprises is the accounting and analytical support of non-current assets, which should provide information about the status of non-current assets, their movement and use. The problem of managing non-current assets of enterprises is becoming more and more urgent. The current activities of enterprises need to be adopted by both conservative and standard and unconventional conclusions based on the practice of financial management and the full implementation of the current financial theory.

Analysis of recent researches and publications.

Most researchers focus their attention on evaluating the structure of non-current assets, its impact on the performance of enterprises, and the financial conditions of the enterprise in general.

A concept of non-current assets management has been developed, aimed at improving the process of forming non-current assets by Yurchyshena & Kovalchuk (2020). This concept is based on such principles as strategics, objectivity, balance, efficiency, complexity, defined goals, key objectives, proposed management methods, and disclosed expected results (Yurchyshena & Kovalchuk, 2020).

Levkovich & Bezliudna investigated the need to improve analytical support for the management of non-current assets of the enterprise in terms of searching for reserves to increase the efficiency of their use (2021).

Lima et al. studied the issues of a theoretical model, AMBP Model, which offers enablers supporting the organizations to make better decisions in infrastructure investments, through the construction of a relationship map between asset management key-processes, asset performance indicators, and business performance indicators (2021).

In another paper, a three-step method for optimizing and pruning budget allocation decisions for a non-current asset management problem is proposed. They suggested that existing asset management methods that either consolidate multiple goals to form a single objective (a priori) or populate a Pareto optimal set (a posteriori) may not be sufficient because a decision maker may not possess comprehensive knowledge of the problem domain (Petchrompo et al., 2021).

A study related to the improvement of methodological approaches to the financial analysis of fixed assets of the enterprise was considered by Golovetsky et al. (2019). Despite the sufficient scope of de-

velopments of scientists in this topic, the issues of analytical support for non-current assets management of enterprises are relevant and require further research.

Purpose. Theoretical, methodical, and practical issues of analysis of non-current assets in the management system for the development of the productive potential of enterprises.

Materials and methods of research.

During the study, general scientific and applied methods and tools were used, in particular: dialectical method of cognition, analysis and synthesis, systematic approach (for studying theoretical issues on analysis of non-current assets); comparison, surveys, expert evaluations, coefficient analysis (study of the practice of accounting and analysis of non-current assets); econometric modeling (assessment of the value of non-current assets in the management system for the productive potential development of the enterprise).

The study was conducted by the practical materials of agricultural company Svoboda. To assess the impact of the value of non-current assets on the main performance indicators of agricultural company Svoboda, an econometric analysis was performed.

The construction of any econometric model is carried out as a sequence of certain steps. Step 1. Introduction to economic theory, the relationship hypothesis. Step 2. Model specification. The model specification is an analytical form of the econometric model. Based on the studied factors, it consists of a certain type of function or functions used to build models, has probabilistic characteristics that are inherent in the stochastic residues of the model. Step 3.

Formation of arrays of input information in accordance with the purpose and objectives of the study. Step 4. Estimation of parameters of the econometric model by the method of least squares. Step 5. If some preconditions of the model are not fulfilled, then to continue the analysis it is necessary to replace the specification or to apply other methods of estimation of parameters. Step 6. Carrying out the analysis of the reliability of the model and the forecast on the constructed model (Perekhozhuk et al., 2017).

Results of the research and their discussion.

Nowadays, an important role is played by the ability to manage the assets of the enterprise, which depends on the effective development of production, obtaining the maximum profit, and increasing the competitiveness of the enterprise. In order to achieve high results of the enterprise activity, it is important to monitor and analyze the state and dynamics of the use of assets, to assess their impact on the main performance indicators of the enterprise. Effective use of non-current assets in the enterprise is not possible without careful analysis. The output of products and reduction of production costs depend on the effective use of non-current assets, which affects the level of profitability and increases profits.

Shamanska noted that in modern conditions, an important role is played by the ability to manage the assets of the enterprise, which depends on the effective development of production, maximizing profits, and increasing the competitiveness of the enterprise (2017). In order to achieve high results of the enterprise activity, it is important to monitor and analyze the state and the dynamics of the use of assets, to assess

1. Non-current assets of agricultural company Svoboda for 2015-2019

Non-current assets	2015		2016		2017		2018		2019	
	thsnd. UAH	%	thsnd. UAH	%	thsnd. UAH	%	thsnd. UAH	%	thsnd. UAH	%
Fixed assets, initial cost	19254	99.1	25129	96.8	39621	99.1	50368	99.96	67008.20	99.97
Long-term biological assets	150	0.8	90	0.3	68	0.2	0	-	-	-
Long-term financial investments	20	0.1	20	0.1	20	0.1	20	0.04	20.00	0.03
Long-term receivables	-	-	724	2.8	280	0.7	-	-	-	-
Total	19424	100	25963	100	39989	100	50388	100	67028.20	100.00

Source: data from agricultural company Svoboda.

their impact on the main performance indicators of the enterprise.

Analytical evaluation of non-current assets using econometric modeling was performed on the materials of agricultural company Svoboda, Odessa region, Izmail district. The company operates in agriculture and specializes in the growing, processing, and selling crop products. The largest share of all non-current assets of the company has fixed assets, the share of which is growing annually and in 2019 was almost 100 percent (Table 1).

Firstly, we formulate the null hypothesis H_0: the value of fixed assets doesn't affect the income or profit of the enterprise. Together with the null hypothesis H_0 put forward an alternative or opposite hypothesis H_1: the value of fixed assets affects the income or profit of the enterprise. The model of the relationship between the selected indicators is specified using simple linear regression. Linear regression models apply when the response variable can be assumed to be a continuous variable or to be normally distributed (Fischer, 2015).

Summary of econometric modeling that describes the relationship between the cost of fixed assets, X (thousand UAH) and income, Y (thousand UAH) according to the company's reporting data for 2015–2019 using the statistical package Data Analysis in Microsoft Excel, is represented on Fig. 1.

	A	B	C	D	E	F	G	H	I
1	*Regression statistics*								
2	Multiple R	0,2301318							
3	R-square	0,05296065							
4	Normalized R-square	-0,2627191							
5	Standard error	11132,8415							
6	Observations	9							
7									
8	Analysis of variance								
9		*df*	*SS*	*MS*	*F*	*Significance of F*			
10	Regression	1	20793067,02	20793067,02	0,167766987	0,709594393			
11	Remainder	7	371820477,3	123940159,1					
12	Total	8	392613544,3						
13									
14		*Coefficients*	*Standard error*	*t-statistics*	*P-Value*	*Bottom 95%*	*Top 95%*	*Bottom 95%*	*Top 95%*
15	Y-intersection	32786,0212	12644,3875	2,592930757	0,080868659	-7454,063023	73026,10551	-7454,063023	73026,10551
16	Variable X 1	0,1182012	0,288581606	0,409593685	0,709594393	-0,800194262	1,036596668	-0,800194262	1,036596668

Fig. 1. The results of modeling the impact of the value of fixed assets on the amount of income of agricultural company Svoboda

The results of the modeling show a slight effect of the value of fixed assets on the value of the company's income, as the correlation coefficient is equal to 0.23, which confirms the weak close relationship between the indicators. Therefore, further analysis of the model will not be appropriate.

Summary of econometric modeling that describes the relationship between the value of fixed assets, X (thousand UAH) and profit, Y (thousand UAH) according to the company's reporting data for 2015–2019 using the statistical package Data Analysis in Microsoft Excel, is represented on Fig. 2.

The results of the modeling show that the relationship between the value of fixed assets and profit is average, as the pairwise correlation coefficient is 0.59. The coefficient of determination is 0.35, therefore, the variation of the company's profit by 35% is due to the impact of the value of fixed assets of the enterprise (Neter et al., 1990). The remaining 65% – the influence of factors not taken into account during modeling. The econometric model of the relationship between profit and the value of fixed assets will be as follows (1):

$$\hat{y} = 18146.875 - 0.137x \qquad (1)$$

Parameter $\hat{a}_1$ characterizes the proportion of the factor's influence on the result. It shows that when the cost of fixed assets increases by 1 thousand UAH, profit decreases (the relationship is inverse, because) on 0.137 UAH.

Since the calculated value of Fisher's criterion exceeds the critical point, the null hypothesis must be rejected and with a probability of 0.95 to accept the alternative, i.e. the resulting econometric model that describes the relationship between the profit from the value of fixed assets is adequate and statistically significant.

A similar relationship is observed when modeling the impact of depreciation on the company's profit (Fig. 3).

The econometric model of the relationship between profit and depreciation of fixed assets will be as follows (2):

$$\hat{y} = 19807.058 - 0.437x \qquad (2)$$

arameter $\hat{a}_1$ characterizes the proportion of the factor's influence on the result. It shows that with increasing depreciation of fixed assets by 1 thousand UAH, profit decreases (the relationship is inverse, because) on 0.437 UAH. Since the calculated value of Fisher's criterion exceeds the critical point, the null hypothesis must be rejected and with a probability of 0.95 to accept the alternative, i.e. the resulting econometric model, which describes the relationship of profit from the depreciation of fixed assets is adequate and statistically

	A	B	C	D	E	F	G	H	I
1	*Regression statistics*								
2	Multiple R	0,594019							
3	R-square	0,352858							
4	Normalized R-square	0,137144							
5	Standard error	4144,689							
6	Observations	9							
7									
8	Analysis of variance								
9		df	SS	MS	F	nificance of F			
10	Regression	1	28099949	28099949	1,635768	0,290867			
11	Remainder	7	51535332	17178444					
12	Total	8	79635281						
13									
14		Coefficients	andard err	t-statistics	P-Value	Bottom 95%	Top 95%	Bottom 95%	Top 95%
15	Y-intersection	18146,88	4707,428	3,854945	0,030838	3165,739	33128,01	3165,739	33128,01
16	Variable X 1	-0,13741	0,107437	-1,27897	0,290867	-0,47932	0,204504	-0,47932	0,204504

Fig. 2. The results of modeling the impact of the value of fixed assets on the amount of profit of agricultural company Svoboda

	A	B	C	D	E	F	G	H	I
1	*Regression statistics*								
2	Multiple R	0,594019							
3	R-square	0,352858							
4	Normalized R-square	0,137144							
5	Standard error	4144,689							
6	Observations	9							
7									
8	Analysis of variance								
9		*df*	*SS*	*MS*	*F*	*nificance of F*			
10	Regression	1	28099949	28099949	1,635768	0,290867			
11	Remainder	7	51535332	17178444					
12	Total	8	79635281						
13									
14		*Coefficients*	*andard error*	*t-statistics*	*P-Value*	*Bottom 95%*	*Top 95%*	*Bottom 95%*	*Top 95%*
15	Y-intersection	18146,88	4707,428	3,854932	0,030838	3165,739	33128,01	3165,739	33128,01
16	Variable X 1	-0,13741	0,107437	-1,27897	0,290867	-0,47932	0,204504	-0,47932	0,204504

Fig. 3. The results of modeling the impact of the depreciation of fixed assets on the amount of profit of agricultural company Svoboda

significant. Thus, based on the results of modeling, we can conclude that the depreciation of fixed assets of the enterprise negatively affects the performance of the enterprise, and therefore non-current assets of the enterprise need an effective and balanced management policy.

On the basis of the conducted modeling, it is possible to make the forecast of indicators for the future period. Forecasting is based on maintaining the general trend obtained using the econometric model, provided that it is adequate. The analyzed company owns fixed assets, which are worn out by 50%; the results of the analysis show that this condition of fixed assets has a negative impact on the performance of agricultural company Svoboda. Assume that their depreciation is not 50% but, for example, 20%, we calculated the performance indicators using a point forecast. It is obtained by substituting in the econometric model of the predicted value of the factor feature (Brocklebank & Dickey, 1986).

In our example UAH, then (3):

$$\hat{y} = 19807.058 - 0.437x \quad (3)$$

$$\hat{y}_{for.} = 19807.058 - 0.437 * x_{for.}$$

41260.058 ≈ 141260 UAH,

that is the point forecast will be as follows: Forecast profit at the level of 141.260 thousand UAH higher than the average value of profit for the analyzed period of time by 128647.4 thousand UAH, which confirms the results of the econometric modeling of the impact of depreciation on the company's profit.

Conclusions and future perspectives of the study.

Our empirical results indicate the existence of the relationship between the value of fixed assets and the company's profit, as well as between the depreciation of fixed assets and profit. According to the results of the study, we can conclude that to increase the efficiency of formation and use of non-current assets in the analyzed company it is necessary to: implement all opportunities to increase production, improve its quality, ensure a high return on investment funds and capital investments; to reduce terms of construction and volumes of unfinished construction; to improve the acquisition of fixed assets, especially in the direction of optimizing the relationship between their individual types, groups, as well as between labor and working capital; to ensure the timely renewal of fixed assets, which makes it possible to increase their operational capabilities, and to provide an equivalent ratio of the cost of new fixed assets with their productivity and their payback.

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Анотація. У сучасних умовах важливу роль відіграє вміння управляти активами підприємства, від якого залежать ефективний розвиток виробництва, отримання максимального прибутку й підвищення конкурентоспроможності підприємства. Задля досягнення високих результатів діяльності підприємства важливо відстежувати та аналізувати стан і динаміку використання активів, оцінювати їх вплив на основні результативні показники діяльності підприємства. Для цього необхідно мати своєчасну та релевантну аналітичну інформацію. Саме тому метою дослідження стали теоретичні, методичні і практичні питання аналізу необоротних активів у системі управління розвитком виробничого потенціалу підприємств.

Дослідження проводилося на матеріалах ПрАТ Агрокомпанії «Свобода», Одеської області, Ізмаїльського району, с. Стара Некрасівка. Використовувалися дані звітності підприємства за 2000–2019 рр.

Під час дослідження застосовувалися загальнонаукові та прикладні методи і прийоми, зокрема: діалектичний метод пізнання, аналіз та синтез, системний підхід (для вивчення теоретичних питань обліку й аналізу необоротних активів); порівняння, анкетування, експертних оцінок, коефіцієнтний аналіз (дослідження практики обліку й аналізу необоротних активів); економетричне моделювання (оцінка значення необоротних активів у системі управління розвитком виробничого потенціалу підприємства).

Результати проведеного моделювання свідчать про вплив вартості необоротних активів, зокрема основних засобів, ступеня їхнього зношення на показники результативності діяльності підприємства. Для підвищення ефективності формування та використання необоротних активів на аналізованому товаристві необхідно: реалізувати всі можливості збільшення виробництва продукції, поліпшення її якості, підвищення конкурентоспроможності, забезпечити високу окупність засобів і капітальних вкладень; скорочувати строки будівництва й обсяги незавершеного будівництва; поліпшити комплектування основних засобів, особливо в напрямі оптимізації співвідношення між певними їхніми видами, групами.

Ключові слова: *необоротні активи; сільськогосподарське підприємство; аналіз; управління; моделювання*