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**APPLIED ASPECTS OF ANALYSIS AND CASH-FLOW MANAGEMENT OF  
AGRICULTURAL ENTERPRISES**

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**Abstract.** *The difficulty in promoting the solvency of agricultural enterprises usually lies in the lack of highly liquid assets, i.e. money. A stable financial condition of business entities is possible subject to effective control over cash flow and improved cash flow management. By cash flows, we mean a set of time-distributed receipts and expenditures of money generated by the economic activity of the enterprise. To optimize the management of financial resources of agricultural enterprises, it is proposed to diagnose cash flows in the following stages: horizontal and vertical analysis; calculation of absolute indicators; analysis of the adequacy of cash flows; evaluating the synchronicity of cash flows; analysis of the efficiency and profitability of the company's cash flows. An example of the implementation of the proposed methodology for analyzing cash flow was carried out according to the financial statements of the Avangard agricultural holding. As a result of the analysis, it was found that due to the increase in the efficiency of cash flow management, the company managed to optimize their movement and achieve a positive net cash flow. Among the effective measures for managing the cash flows of the agricultural holding, the following were identified: restructuring of credit obligations with the majority of Ukrainian and foreign investors; increase in sales volumes by increasing the share of receivables; development of sales through highly profitable retail chains; investing in the implementation of product safety and quality systems and energy-efficient complexes, due to which it was possible to reduce the production cost.*

**Keywords:** *cash flow; net movement of funds; sufficiency of cash flows; synchronicity of cash flows; profitability of cash flows*

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## **1. Introduction**

The successful functioning of an enterprise in a market economy is possible only due to the continuous flow of funds, the level of consistency of which in terms of volume and time largely depends on the liquidity, financial stability and future efficiency of the enterprise.

The importance of the role and significance of cash flows for the effective operation of modern enterprises is confirmed by the results of studies by the Small Business Administration of USA [1]:

1) lack of financial resources is one of the reasons why small businesses fail (68.9% of owners are afraid of losing their business due to a possible loss of access to funds)

2) 58.2% of entrepreneurs rate the delay in receiving funds from buyers as the biggest challenge in managing cash flows;

3) 37.5% of top managers of enterprise management consider cash flow a difficult aspect of their activities.

## **2. Recent research and publications analysis**

Analysis and management of cash flows of enterprises were studied in their works by such researchers as: I. A. Blank [2], I. A. Kriukova. [3], I. S. Litvin [4], A. M. Podderiohin [5], Yu. M. Tiutiunnik [6] and other scientists. In the works of scientists, the sequence of analysis of cash flows covers from 5 to 8 stages. In particular, in [2] a methodological approach is described, according to which it is advisable to analyze the cash flows of an enterprise in 5 stages: studying the dynamics of the volume of formation of a positive cash flow; assessment of the volume of negative cash flow formation; studies of the balance of cash flows; studying the synchronicity of cash flows; assessment of the effectiveness of cash flows. Seven stages of the analysis of enterprise cash flows are distinguished in [4, 6]. However, existing studies lack a unified methodology for analyzing cash flows, including for agricultural enterprises.

## **3. Purpose of the article**

The purpose of the article is to substantiate the methodological and applied aspects of the analysis and management of cash flows of agricultural enterprises.

## **4. Materials and methods**

Money plays various roles in operating, investing and financing activities of an enterprise. Each business transaction is accompanied either by the receipt or expenditure of money. The movement of cash flows can be dealt as a turnover of funds, that is, their receipts and payments for a certain period of time [2]. According to Ukrainian accounting regulations, a cash flow means the inflow and outflow of money and money equivalents. In our opinion, cash flows are a set of receipts and expenditures of money distributed over time, generated by the economic activity of an enterprise.

After analyzing a number of studies [2-6], it is proposed to carry out the diagnostics of cash flows of agricultural enterprises in the following stages: horizontal and vertical analysis of cash flows (stages 1 and 2); calculation of absolute indicators of cash flows (stage 3); analysis of the adequacy of cash flows (stage 4); evaluating the synchronicity of cash flows (stage 5); analysis of the efficiency and profitability of the company's cash flows (stage 6 and 7).

With the help of horizontal analysis, the dynamics and trends of changes in positive and negative cash flows are investigated. Vertical analysis allows assessing the structure of cash flows, that is, calculating the share of individual sources of income and areas of spending in the total.

Among the absolute indicators of cash flows, it is advisable to single out the Cash-Flow indicator and liquid cash flow. The most common method of calculating Cash-Flow is that depreciation deductions for the corresponding period are added to the net profit. Liquid cash flow characterizes the changes in the net credit position (the difference between the amount of loans received by the company and the amount of money) of the company during a certain period.

Cash flow analysis (stage 4) involves determining the adequacy of the net cash flow generated by the company to finance the necessary needs. Research at this stage is carried out by calculating the following indicators: the ratio of the adequacy of the net cash flow; Cash-Flow sufficiency ratio; ratio of Cash-Flow to current accounts payable.

To assess the synchronicity of the formation of funds, the liquidity ratio of the cash flow is used for individual time intervals during the analyzed period. To ensure the necessary liquidity, the value of the liquidity ratio of the cash flow must be at least 1.

The generalizing indicator of the assessment of cash flow is the coefficient of efficiency of the company's cash flows, calculated as the ratio of positive cash flow to negative cash flow. The financial condition of the enterprise is recognized as stable if a balance is ensured between the receipt and expenditure of funds, that is, when the value of the cash flow efficiency ratio is close to 1.

When calculating profitability indicators, the financial result obtained is compared with the company's cash flows. Among the indicators of the profitability of cash flows, it is advisable to calculate the profitability of the funds received, the profitability of the money spent and the profitability based on the cash flow.

### 5. Obtained results and discussion

According to the proposed methodology, an analysis of cash flows was carried out on the example Avangard – one of the largest agricultural holdings in Ukraine and the leader in the production of eggs and egg products. As of the end of 2018, Avangard held 30% of the industrial egg market and 66% of the dry egg products market in Ukraine. The said agricultural holding is the largest exporter of eggs and dry egg products and sells products mainly to the Middle East, Africa, Asia, as well as the CIS and the EU member states. For the study, data from open sources were used.

Based on the horizontal and vertical analysis of Form No. 3 "Statement of Cash Flows" [7] (stages 1 and 2), it was concluded that the net cash flow from operating activities was positive and increased in 2018 compared to 2017. As a result of effective cash flow management, we managed to obtain a net profit of UAH 444.5 million, which is UAH 262.1 million more than in 2017. The company's current assets in 2018 increased by UAH 279.9 million against the previous year, mainly due to an increase in accounts receivable, which had a positive effect on sales volumes. There was an outflow of funds for investment activities in 2016-2018. In 2018, it amounted to UAH 180.6 million against UAH 105.9 million in 2017 and UAH 1,190 million in 2016. At the same time, the company directed funding for the renovation of fixed assets. In 2018, there was no movement of funds for financial activities. The agricultural holding Avangard was in the process of negotiations with various groups of creditors to agree on the terms of a comprehensive debt restructuring. The interest rate was significantly reduced, and the bulk of the debt repayment was carried over to the second half of the repayment period.

Based on the financial statements of the Avangard agricultural holding, it was established that in 2018, due to the increased efficiency of cash flow management, it was possible to optimize their movement and achieve a positive net cash flow (Table 1).

Table 1 Analysis of cash flows of the Avangard agricultural holding, thousand UAH

Indicator	2016	2017	2018	Deviation (+,-)	
				2018/2016	2018/2017
Net cash flows from operating activities	1093285	105615	189745	-903540	84130
Net cash from investing activities	-1190661	-105857	-180557	1010104	-74700
Net cash flows from financing activities	0	-1283	0	0	1283
Net cash flows for the reporting period	-97376	-1525	9188	106564	10713
Balance at the beginning of the year	102651	5275	3750	-98901	-1525
Impact of changes in exchange rates on the balance of funds	0	0	0	0	0
Balance at the end of the year	5275	3750	12938	7663	9188

Source: summarized according to the financial statements of the Avangard agricultural holding [7].

The conclusion on the quality of cash flow management of the enterprise, presented in Table 1, is done by a combination of positive and negative values of net cash flows from operating, investment and financial activities according to the methodology [8], in accordance with the template (Table 2).

Table 2 Template for determining the level of quality of enterprise cash flow management

Indicator	Direction of cash flow ("+" - positive or "-" - negative)		
Net cash flows from operating activities	+	+	-
Net cash flows from investing activities	-	-	-
Net cash flows from financing activities	-	-	-
Management quality level	High	Normal	Low

Source: summarized according to [8].

The conducted research indicates that the quality of cash flow management in the Avangard agricultural holding is characterized as high. This means that as a result of operating activities, in particular from the sale of products, the company receives enough money to be able to make investments, as well as repay borrowed loans.

As a result of the analysis of information from open sources, including the website of the Avangard agricultural holding, it was found that in order to improve the efficiency of cash flow management the company:

- initiated negotiations on the restructuring of loan obligations with the majority of Ukrainian and foreign investors;
- increased sales volumes by increasing the share of receivables, that is, supplied its goods for sale without prepayment or with partial prepayment;
- expanded the list of countries for exporting main products (for example, in 2018 the company received official permission to export category "A" eggs to the EU);
- opened a new direction and began to export the carcasses of laying hens to foreign markets (in 2018, she sold these products to 6 countries of the world);
- in the domestic market, the company focused on the development of sales through highly profitable retail chains;
- invested funds in the implementation of product safety and quality systems;
- launched biogas complexes, due to which it was possible to reduce the cost of production.

The assessment of the sufficiency, synchronicity and efficiency of the cash flows of the agricultural holding (stages 3-6) was carried out on the basis of calculations of absolute and relative indicators, which are summarized in table. 3.

Table 3 Calculation of absolute and relative indicators of cash flows of the agricultural holding "Avangard"

No	Indicator	2016	2017	2018	Deviation (+,-)	
					2018/2016	2018/2017
1.	Net financial result: profit (loss), thousand UAH	-485726	182378	444502	930228	262124
2.	Depreciation, thousand UAH	60655	61137	66094	5439	4957
3.	Cash flow (Cash-Flow), thousand UAH (No 1 + No 2)	-425071	243515	510596	935667	267081
4.	Long-term bank loans, thousand UAH: a) at the beginning of the year	0	645923	592640	592640	-53283
	b) at the end of the year	645923	592640	0	-645923	-592640
5.	Short-term bank loans, thousand UAH: a) at the beginning of the year	0	0	0	0	0
	b) at the end of the year	0	0	0	0	0
6.	Cash and cash equivalents, thousand UAH: a) at the beginning of the year	102651	5275	3750	-98901	-1525
	b) at the end of the year	5275	3750	12938	7663	9188
7.	Liquid cash flow, thousand UAH ((No 4b + No 5b – No 6b) – (No 4a + No 5a – No 6a))	743299	51758	601828	-141471	550070
8.	Net cash flow, thousand UAH	-97376	-1525	9188	106564	10713
9.	Repayment of loans, thousand UAH	645923	1283	0	-645923	-1283
10.	Increase in reserves, thousand UAH	187296	-408161	9802	-177494	417963
11.	Payment of dividends, thousand UAH	0	0	0	0	0
12.	Net cash flow adequacy ratio (No 8 / (No 9 + No 10 + No 11))	-0,117	0,004	0,937	1,054	0,934
13.	Current liabilities and collateral, thousand UAH	17797854	14554458	18538265	740411	3983807
14.	Current financial investments, thousand UAH	0	0	0	0	0
15.	Debt (net), thousand UAH (No 13 – No 6b – No 14)	17792579	14550708	18525327	732748	3974619
16.	Cash-Flow sufficiency ratio (No 3 / No 15)	-0,024	0,017	0,028	0,052	0,011
17.	Current accounts payable, thousand UAH	1238058	2063948	8842377	7604319	6778429
18.	Cash-Flow to current accounts payable ratio (No 3 / No 17)	-0,343	0,118	0,058	0,401	-0,060
19.	Positive cash flow, thousand UAH	1093285	105615	189745	-903540	84130
20.	Negative cash flow, thousand UAH	1190661	107140	180557	1371218	73417
21.	Cash flow liquidity indicator (No 19 – (No 6b – No 6a)) / No 20	1	1	1	0	0
22.	Efficiency indicator of cash flows (No 19 / No 20)	0.918	0.986	1.051	1.969	0.065

Source: authors' own calculations based on the financial statements of the Avangard agricultural holding [7].

The results of Table. 3 indicate that in 2018 against 2017, the cash flow indicator (Cash-Flow) increased by UAH 267,100,000, including due to net profit – by UAH 262.1, depreciation – by UAH 5.0.

During the same period, net cash flow increased by UAH 10.7 million, due to which the net cash flow adequacy ratio increased from 0.004 to 0.937. This indicates that in 2018 these funds covered 93.7% of the amount of loan repayments and the increase in reserves.

The Cash-Flow adequacy ratio, which is determined by the ratio of cash flow to debt, in 2017 was 0.017, and in 2018 it increased to 0.028, which increased the company's ability to pay off its debts through highly liquid assets.

The ratio of Cash-Flow to current accounts payable decreased from 0.118 (2017) to 0.058 (2018), that is, the growth rate of Cash-Flow is significantly lower than the growth rate of current accounts payable.

The liquidity ratio of the cash flow for 2016-2018 is 1, which indicates the synchronization of cash flow. The cash flow efficiency ratio hovers around 1 (0.918 - in 2016; 0.986 - in 2017; 1.051 - in 2018). This level indicates the rational proportions of the movement of funds in the enterprise.

At the last stage, the indicators of profitability of cash flows of the agricultural holding "Avangard" (stage 7) were calculated, the calculation results of which are given in Table. 4.

Table 4 Calculation of indicators of profitability of cash flows of the Avangard agricultural holding

No	Indicator	2016	2017	2018	Deviation (+,-)	
					2018/2016	2018/2017
1.	Net financial result: profit (loss), thousand UAH	-485726	182378	444502	930228	262124
2.	Net income from the sale of products (goods, works, services), thousand UAH	3161016	3520633	3276797	115781	-243836
3.	Positive cash flow, thousand UAH	1093285	105615	189745	-903540	84130
4.	Negative cash flow, thousand UAH	1190661	107140	180557	-1010104	73417
5.	Net cash flow, thousand UAH	-97376	-1525	9188	106564	10713
6.	Return on funds received,% (No 1 / No 3 × 100)	-44.4	172.7	234.3	278.7	61.6
7.	Return on funds spent,% (No 1 / No 4 × 100)	-40.8	170.2	246.2	287.0	76.0
8.	Profitability based on cash flow,% (No 5 / No 2 × 100)	-3.1	-0.043	0.280	3.4	0.3

Source: authors' own calculations based on the financial statements of the Avangard agricultural holding [7].

The indicators of profitability of cash flow in 2016 had negative values for the unprofitable activities of the agricultural holding. Due to the outstripping growth in net profit compared to positive and negative cash flows, the aggregate level of profitability of the cash flow increased from -3.1% in 2016 to 0.28% in 2018.

Thus, improving the efficiency of cash flow management allowed the company to obtain a positive profitability of the use of funds.

## 6. Conclusions

The complex use of the proposed stages of analysis and the system of indicators for assessing the cash flows of agricultural enterprises makes it possible to determine the level of sufficiency of the formation of funds, the efficiency of their use and achieve a balance of positive and negative cash flows, to establish positive and negative trends, existing and potential problems associated with the formation and use of money funds, assess the effectiveness of cash flow management to develop the necessary management decisions. The proposed methodology for analyzing cash flows can be applied to other types of activities.

The most significant measures of cash flow management are determined: restructuring of credit obligations; increase in sales volumes by increasing the share of receivables; promotion of sales through highly profitable retail chains; investing in the implementation of safety and product quality

systems and the use of energy-efficient complexes, due to which it is possible to reduce the cost of production.

Further improvement of the efficiency of cash flow management at the enterprise can be achieved through:

- reducing the level of fixed and variable costs;
- application of the accelerated depreciation method;
- sales of fixed assets, intangible assets and inventories that are not used;
- strengthening control over accounts receivable.
- Among the measures that contribute to the optimization of cash flows and, accordingly, the activation of entrepreneurship, at the national level, the following can be distinguished:
  - reduction of tax pressure and maximum simplification of tax administration procedures;
  - providing with the modernization and restructuring of the production and resource potential, reducing its energy and material consumption;
  - support of production by stimulating consumer demand of the population, expanding the share of the solvent domestic market;
  - providing with reliable legal protection of entrepreneurial activity, avoiding from permanent changes in legislation.

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