

Cost transformation in the ordinary activity of a manufacturing enterprise

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Abstract

The peculiarities of the activity of agricultural enterprises determine the complexity of the system of costs, causing differences in the methodology of their accounting. However, the study of the specificity of an object is based on the study of its inherent essential characteristics. The article defines the properties of costs, their features, options for their formation from the point of view of previously constructed models based on balance sheet equality. The need to classify costs depending on the ratio of the moment of their recognition and the fact of disposal of the asset has been established. Particular attention is paid to the loss of property, as a separate feature of costs, the quantitative values of which must be reduced to zero. For this it is necessary to carefully study and control its qualitative characteristics. A model has been developed for cost transformation of a manufacturing enterprise, reflecting the fundamental processes of the formation of various states of costs: permanent production assets, current production assets, current financial assets, property losses and expenses. The study of these processes will expand the understanding of the essence of costs, determine the characteristics and options for transforming certain properties, which will productively affect the organization of the accounting and information space in the specific conditions of making managerial decisions.

Keywords: Costs. Cost properties. Expenses. Cost transformation.

1. Introduction

Achievement of any purpose presupposes the implementation of actions that imply the need to spend energy, effort, means of various types of resources. The activity of an economic entity is always purposeful, in particular, any commercial organization is aimed at making a profit, a manufacturing enterprise is to create a product of labor, a trade organization is to provide consumers with goods, etc. At the same time, to perform the relevant tasks, economic resources are spent for the acquisition of other resources, for the production of finished products (works, services), their sale, for the receipt of income (proceeds), for the

implementation of procedures that ensure all the specified processes and working conditions of the economic entity in general conditions for making management decisions.

The expenses incurred as a result of the necessary actions are recorded through accounting by reflecting costs, which are the primary characteristic of business transactions that structurally form the normal activities of the enterprise (Mizikovsky I.E., 2004).

The category of costs is a significant object of the economic life of any organization, participates in most business operations, respectively, costs are the defining element of the accounting and information space. The determining vector of making managerial decisions, the calculated value of financial results and most other economic indicators of activity depend on the chosen and implemented procedure for their accounting. Methodological principles of cost management should be based on a preliminary study of the nature of the formation of the accounting object under study.

2. Theory

The prospect and problems of applying one or another cost accounting system and calculating the cost of a product of labor are actively discussed in scientific literature (Santos et al., 2020; Silva et al., 2020; Khoruzhy et al., 2018; Khoruzhy et al., 2020; Kostyukova et al., 2018). The definition of variables (Veiga et al., 2016) and fixed (Venâncio et al., 2017; Olivo et al., 2012), direct (Vieira et al., 2007) and indirect (Meglierini, 2007) costs is considered.

The costing system is viewed as a management tool in the enterprise and includes costing methods (Crepaldi, 2016; Coelho, 2011; Coronetti et al., 2003). According to Abbas et al. (2012) a positive feature of the costing method is the ability to improve decision-making and help in choosing the right options for overcoming difficulties, seeking to make accurate corrections to obtain clearer results. In accounting, various costing methods are used, based on a group of instruments and methods, that adjust and calculate the cost of services / products (Schultz et al., 2008). The most common costing methods include: ABC (activity-based costing), absorption-costing, variable costing, etc. (Martins, 2010 apud; Venâncio et al., 2017; Khoruzhy et al., 2018; Khoruzhy et al. al., 2021).

The problem of using a specific cost accounting system is studied from the standpoint of differences in regulatory requirements, the needs of external and internal users of accounting information, the principles of forming financial and management reporting. Known cost accounting methods are compared with each other, the possibility and

effectiveness of their application in a particular industry is being investigated (Assis, Neto et al., 2021; Araújo, 2015; Pultz, 2016; Pereira et al., 2020; Silva et al., 2020; Segala et al., 2007; Ribeiro et al., 2019; Khoruzhy et al., 2020; Kostyukova et al., 2018).

The opinion about the optimal use of absorption-costing for agricultural organizations is quite widespread (Ribeiro et al., 2019). According to Marion et al. (2002) currently, a complete cost system has broad and well-defined goals that reflect its importance as the main tool for managing any enterprise, especially in agriculture, where there is a time gap between production and sales, that is, between costs and income, in contrast to the simplicity of other types of business, which require special methods to represent not the costs, but the economic results of the enterprise.

Separately, it should be noted one of the principles for calculating costs allocated by Bornia (1995) - ideal absorption-costing, the focus of which is management surveys associated mainly with losses in the production process. The purpose of the method is to identify losses in the production process, which will allow management to direct efforts to eliminate the corresponding problems.

Each study under consideration assumes some differentiation of the constituent elements of the cost accounting system. However, costs are an integral independent economic category that has its own characteristics and peculiarities, regardless of the specification of the activity in which they are carried out. Therefore, the construction of the cost system should be based on the substratum approach, according to which, before considering, developing and applying various methodological principles and approaches to cost accounting, it is necessary to investigate the nature of the accounting object under study, as a fundamental characteristic of business transactions.

Accounting regulations do not often clearly define the treatment of costs. The constructive definition of the term is the one in accordance with the Resolution of the Ministry of Finance of the Republic of Belarus dated 30.09.2011 No. 102 "On approval of the Instruction on the accounting of income and expenses", which is cited by Tsait et al. (2019): costs are the value of resources acquired and (or) consumed by an organization in the course of carrying out activities, which are recognized as assets of the organization if it expects to receive economic benefits from them in future, or as expenses of the reporting period if the organization does not expect to receive economic benefits from them in future.

Many scientists define costs. Attempts to generalize them are found in the works of various authors (Rostovtseva, 2016; Mizikovsky, 2004; Silva et al., 2020). Disputes often

arise about the identity and equivalence of costs and expenses, the dependence of the definition and concept of costs on the purposes of use, etc.

Costs are defined by Martins (2003) as expenses required to purchase a product or service. According to Queiroz Filho (2008), costs are the consumption of value for specific purposes by parties concerned.

For cost accounting purposes, Queiroz Filho (2008) defines costs as "outlay associated with a product or service used in the production of other products or services". Outlay is defined as "financial sacrifices that a company makes to obtain a product or a service". He defines expenses as "a product or a service, directly or indirectly consumed to generate income", and losses as "a product or a service consumed abnormally and unintentionally".

Akira et al. (2010) note that the nature of costs can be tangible or intangible, objective or subjective, and can be represented in the form of money, time spent, income and / or other elements.

With all the variety of interpretations, the characteristic of costs associated with actions to have expenses (consumption, disposal) of funds (assets) of an economic entity is indisputable.

If, as a result of consumption (disposal) of funds, another asset is formed, it, in turn, acts as a means for further consumption (disposal):

- money spent on the purchase of materials that act as a means for further consumption in production;

- as a result of the consumption of raw materials, another asset is formed - directly finished goods, or initially costs in work in progress, then finished goods;

- monetary funds can be spent on the acquisition of an item of fixed assets - an asset, the use of which is expressed in the form of amortization expenses that form costs in work-in-progress;

- etc.

In some cases, as a result of the disposal of an asset (for example, finished goods being sold), it is expected to receive income (revenue), which, of course, is expressed in the receipt of the asset directly in cash, or initially, receivables. The considered disposal of the asset is defined as expenses, which are also called "revenue expenses".

In previous studies, the procedure for the formation of costs and expenses was studied, the corresponding models were built (Polikarpova and Mizikovsky, 2020). Further, it is necessary to present in a generalized form the process of their transformation based on considering the features of transforming costs into a particular state.

3. Methods

3.1. Features of cost formation from the point of view of the proposed sign models

Let us consider the procedure for implementing the main costs of a manufacturing enterprise from the point of view of the proposed mathematical models for cost outlay (Polikarpova and Mizikovsky, 2020):

- the model of cost formation of an economic entity:

$$(a - o) - (A - O) = 0, \quad (1)$$

- the costs-to-expenses transition model:

$$(a - o) - (A - O) \neq 0, \quad (2)$$

where

a is the asset reduction as a result of expenses;

A is the increase in the asset that is the cause or result of the implementation of costs (for the creation of the asset);

o is the decrease in liabilities as a result of expenses;

O is the increase in the liability that is the reason for the implementation of costs (for the repayment of obligations).

The main example of cost formation and transition to the state of expenses is the process:

- starting with the consumption of resources (a) for the creation of current production assets (A) in the same amount - cash outlay for the purchase of materials (with the repayment (o) arising from the supply (O) of the debt to the supplier), wages (o) according to the initially accrued debt (O), etc., consumption of resources (a) directly in production for the formation of finished goods (A) (or in the form of costs in work-in-progress);

- ending with the sale of the current production asset (a), finished goods, when the costs accumulated in it become expenses, and income is generated in another amount equal to the value of the arising receivables (A) of the buyer at fixed prices. The difference between income and expenses ($A - a$) will form the financial result.

With the help of accounting records, the amount of costs is accumulated on accounts for current production assets, with further debiting to sale account to reflect the expenses of ordinary activities. *As a result of the sale, an asset is formed including cash received from buyers, but it is often preceded by the formation of another asset or receivables.*

To account receivables all methodological components have been identified. However, its reduction is the disposal of the asset, representing the incurrence of costs. Table 1 shows the results of disposal of receivables for the most common reasons in terms of cost formation.

Table 1: The main options for cost formation as a result of disposal of receivables

Reason for disposal	The resulting changes in assets and (or) liabilities	Formed cost model	Result of disposal of receivables
Debt repayment by a debtor	Increase in assets - cash	$a - A = 0$	Cost formation without going into the state of expenses
Writing off bad debts	No increase in assets or change in liabilities	$a \neq 0$	Costs are directly transferred to the state of expenses, as a rule, with the intermediate formation of a reserve for doubtful debts. At the same time, there is a decrease in equity capital.
Assignment of claim (cession)	Increase in assets due to the receipt of cash from the assignee in an amount less than the amount of the assigned debt	$a - A \neq 0$	Costs are directly transferred to the state of expenses, while the income from the sale is formed. There is decrease in equity capital.

When debtors repay debts, a new asset is created for cash, the value of which is included in their total mass, which will later be spent without any connection with specific repaid receivables.

The peculiarity of the costs arising from this is that there is a kind of *transformation of one financial asset into another current financial asset* for subsequent spending in different directions.

Writing off bad debts, as well as *creating a reserve* for doubtful debts, involves cost formation with a direct transition to the state of other expenses. In addition, it can be noted that the costs generated in this situation are *one of the components of property losses, as a separate group of costs* (Polikarpova et al., 2020).

The sale of an asset or receivables is a transaction that is not related to the reasons for its formation. In this case, the sale of the asset will bring other income, since such operations are not usual for the manufacturing enterprise, respectively, the generated costs will pass into the state of other expenses.

It is necessary to highlight separately the option of reflecting operations for the formation of costs, when *the disposal of an asset, which characterizes the implementation of costs, occurs after their accrual*. Examples of these operations are shown in Table 2.

Table 2: Examples of business transactions with accrual of costs prior to disposal of the related asset

Operations involving the implementation of costs	Examples of operations	The sequence of changes in the asset, liability of the balance sheet	Formed cost model
Accrual and transfer of debt with direct consumption of production resources	Accrual and transfer of payroll liabilities to employees	1) an increase of the value of finished goods (or work-in-progress) with an increase of liabilities to employees on the liabilities side; 2) a cash decrease on the asset side with a decrease in liabilities to employees.	$(a - o) - (A - O) = 0$
Accrual and transfer of liabilities	Accrual and transfer of liabilities to suppliers	1) an increase in the asset of the value of the acquired property on the asset side with an increase of liabilities to suppliers on the liabilities side; 2) a cash decrease on the asset side with a decrease in liabilities to suppliers on the liabilities side.	$(a - o) - (A - O) = 0$
Creation and use of reserves	Calculation and transfer of liabilities for fines	1) an increase in liabilities to creditors on the asset side without an increase in the asset, respectively, but with a decrease in the equity capital on the liabilities side; 2) a cash decrease on the asset side with a decrease in liabilities to creditors on the liabilities side.	$O + (a - o) \neq 0$
Estimated reserve for doubtful debts	Estimated liability for upcoming vacation payments	1) an increase of the reserve on the liabilities side with an increase of the amount of work-in-progress on the asset side; 2) a decrease of the reserve on the liabilities side with an increase in liabilities to the employee; 3) a cash decrease on the asset side with a decrease of liabilities to an employee on the liabilities side.	$(a - o) - (A - O) = 0$
		1) a decrease of the equity at the time of a reserve accrual on the liabilities side that does not imply an increase of the asset and a decrease of the liability; Further, when compiling a balance sheet, the receivables decrease on the asset side by the amount of the estimated reserve, but its actual disposal does not occur; 2) at the time of writing off bad debts the actual decrease of receivables on the asset side by the amount of the estimated liability.	$A \neq 0$

	Estimated litigation liability	1) an increase of the reserve on the liabilities side without an increase of the asset and a decrease in liabilities, respectively, with a decrease in of the equity; 2) a decrease of the amount of the reserve on the liabilities side with an increase of obligations by court decision to the plaintiff; 3) a cash decrease on the asset side with a decrease in liabilities to the plaintiff.	$O + (a - o) \neq 0$
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The accounting procedure for the transactions under consideration technically confirms that the essence of costs implies not only actual, but also the expected consumption of resources. In this connection, it is proposed to highlight the attribute of the *cost classification* from the point of view of the technique of their accounting by the accrual method *depending on the ratio of the moment of recognition of costs and the fact of disposal of the asset*:

- costs incurred on disposal of an asset (for example, consumption of raw materials for production);
- costs accrued until the disposal of the asset (examples in Table 2);
- costs accrued after the moment of disposal of the asset (reflection of identified shortfalls).

Modeling the process of cost transition from one state to another is based on the fact that almost any decrease in an asset, its book value or disposal generates costs, since the reason for this is the planned or forced need to ensure the current and further work of an economic entity. In certain cases, causing a decrease in the organization's equity capital in order to maintain balance sheet equation, the costs pass into the state of expenses of the period, previously accumulating in the value of production or financial assets, or without preliminary accumulation (Fig. 1) (Polikarpova and Mizikovsky, 2020).

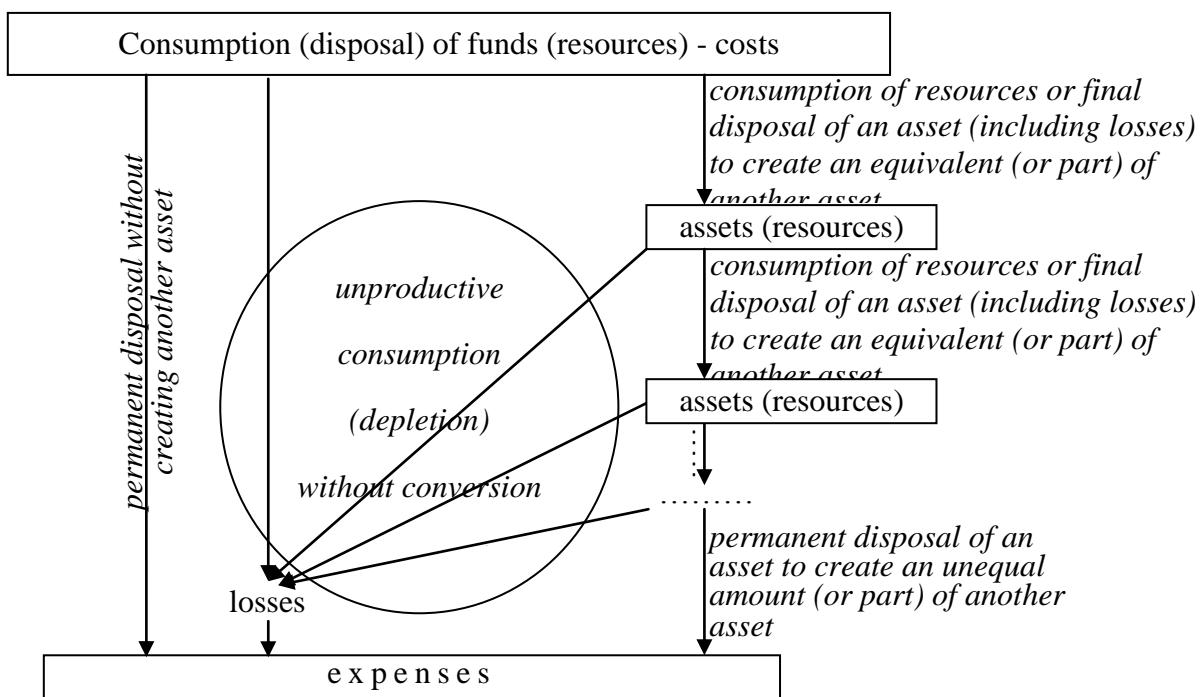


Figure 1: Costs to expenses conversion process

It should be noted that the losses of property of an economic entity is one of the cost states along with assets (financial and production) and expenses. The corresponding modification of costs is often represented by the following chain of transition from one property to another: asset - losses - expenses. An example is non-refundable shortfalls.

Identifying risks and minimizing property losses in an organization is one of the defining elements of ensuring work efficiency, therefore it is important to investigate the nature of this accounting object, which is one of the properties of costs.

3.2. Losses of an economic entity in the process of cost transformation

In view of the variety of losses of an economic entity, their characteristics, causes of occurrence, actions taken by responsible persons and the presence of perpetrators (Polikarpova et al., 2020), it is proposed to investigate the process under study from the point of view of the proposed cost formation models and their transition to the state of expenses (Polikarpova and Mizikovsky, 2020).

The losses of an economic entity are part of its costs, since they imply a decrease in the value of the asset, initially motivated by the goals of obtaining the planned financial and economic results, but in the end, they did not have a return. Achievement of strategic goals is

based on the implementation of tactical tasks in accordance with the adopted management decisions. The *reasons for the lack of return* as a result of the implementation of the corresponding costs can be:

- the irrationality of the management decision itself (as a result of an error or uncertainty and risks), for example, losses from unrealistic to charging receivables, from untimely response to the impact of weather conditions, etc.;
- incorrect implementation of decisions or work functions by specific employees, including the intentional one;
- uncontrollable impact of external factors of activity, the consequences of which cannot be prevented.

In this case, the specified decrease in the asset can be either identified (already *completed*) or *expected*.

In the first case, one can speak about shortage and damage to property, spoilage in production, shortage of products, etc. It should be noted that with the indicated losses, *cost options* are possible *without going into the state of expenses*:

a) when identifying the guilty persons and compensating for damage by them, the result of disposal (damage) of an asset is an increase in another asset - receivables. Using the example of a shortage of funds, it is possible to form the following model: $a - A = 0$, where, a is the amount of a decrease in funds (shortage), A is an increase in the receivables of the guilty person;

b) if the cause of losses is natural processes and other circumstances, the consequences of which cannot be prevented and overcome in an economically justified way as a result of management decisions and the necessary actions of responsible persons, the amount of asset reduction is included in the cost of production. This increases the value of another asset - *costs in work-in-progress or finished goods*. These reasons are a necessary factor (condition) of production. An example of these losses is the natural loss (NL) of seeds during storage - a decrease in the value of an asset with an increase in costs in work-in-progress or finished goods.

Compensation for losses by the guilty person is the return of the organization's property, and not its income. If the (market) value of the deposited funds is higher than the book value of the recoverable property, then only the difference between them forms the income of the organization. If the shortage is partially compensated, the remaining amount of the loss goes into the state of expenses.

Losses of property as a result of an emergency situation (ES) are not directly related to the nature of production and the characteristics of the activity of an economic entity, do not imply an increase in the asset and immediately *go into a state of expenses*. At the same time, the amount of compensation for damage by the insurance organization is not a return of property and forms an extraordinary income.

If, upon detection of losses of an economic entity, a subsequent increase in assets does not occur, the costs go into the state of expenses of the period, which corresponds to model $a \neq 0$. The main models for cost formation of an economic entity and their transition to the state of expenses as a result of property loss are presented in Table 3.

Table 2: Models of the formation of costs of an economic entity and their transition to the state of expenses as a result of losses of the economic entity

Conditions and results of losses	Changes in assets and (or) liabilities resulting from losses	Cost model	Explanation
Compensation for the loss is made by the guilty person	Increase in assets - receivables, primarily	$a - A = 0$	Costs are formed without transition to the state of expenses without affecting the amount of equity capital.
Losses are caused by the irresistible impact of the consequences of production factors	Formation of the current production asset - costs in work-in-progress		
Without compensation for the loss by the guilty person	Without increasing assets or decreasing liabilities	$a \neq 0$	Costs go directly to the expenses state. At the same time, there is a decrease in equity capital.

In view of this, *the validity of the recognition of guilty persons, reasons for the loss of property, actions taken by the responsible persons* are of fundamental importance.

The procedure for compensation for losses of an economic entity is established as a result of investigative measures, as well as in court. At the same time, determining the degree of invincibility of operating conditions that have become the reasons for the loss of property, as well as the economic feasibility of the managerial decisions and actions of the responsible persons taken at the same time, is the prerogative of the work of the organization's management.

The negative impact of *natural factors* of production on its results is most typical of agricultural organizations. For each fact of the influence of natural phenomena and biological characteristics of accounting objects on property losses, it is necessary:

- to determine the ways to overcome negative consequences;
- to consider the economic feasibility of one or another option of action, both for the situation under consideration and in the future;

- to evaluate the chosen option of actions in terms of the degree of actual prevention of losses as a result of its implementation.

For example, crop losses due to untimely harvesting may be caused by irrational organization of field work, given the appropriate opportunities. And vice versa, timely management decisions and appropriate actions are justified by specific current factors: heavy continuous rains, lack of serviceable equipment, etc.

The reasons for situations with negative consequences of natural factors must be assessed and prevented in advance: to provide technical training for intensive work, human resources, to develop a technological process with options for changing operations depending on changes in production conditions.

Appropriate management decisions for the future should be based on many years of experience, taking into account the specific area, type of product, habitual working conditions, their variability, etc. For example, the provision of production fields with irrigation installations may be quite relevant in a specific year of severe drought, which for several other years was not characteristic of the climate in the relevant area. Comparing the losses received from the drought with the costs of purchasing an irrigation installation, the management of the organization may conclude that it is economically inexpedient to purchase it.

When taking appropriate actions to reduce crop losses, the resulting shortage of products should be considered due to the irresistible impact of natural factors on the production process. Consequently, the formation of these losses in this case is an integral part of the technological process that creates such a value as a product of labor.

4. Model and Results

The study made it possible to establish that in the ordinary activities of a manufacturing enterprise, the formation of costs involves the realized or expected consumption, or the disposal of resources to create assets that reflect a specific state of costs:

- permanent productive assets (for example, the outlay of cash (or other resources) for the acquisition (or construction) of items of fixed assets);
- the current production asset (for example, the outlay of cash (or other resources) to acquire (or produce) inventories);

- the current financial asset (for example, in case of compensation for shortages by a guilty person - the actual disposal of the asset implies the formation of receivables with a further receipt of cash instead of it).

In addition, the disposal of finished goods for sale to get cash from customers, and often preceded by the creation of another asset or receivables. However, the value of current financial assets in this case is formed regardless of the assessment of the retired production asset, the cost of sales is not included in its composition, but forms the expenses of the period

- the state of costs not directly included in the circulation of resources at the enterprise, which determines the financial result of the activity. However, expenses are incurred to generate the corresponding income, which ensures the receipt of cash. Thus, when finished goods are sold, the costs are transferred to the state of current financial assets through the state of expenses.

Figure 2 shows an example of the sequence of cost transition from one state to another, inherent in the normal activities of a manufacturing enterprise.

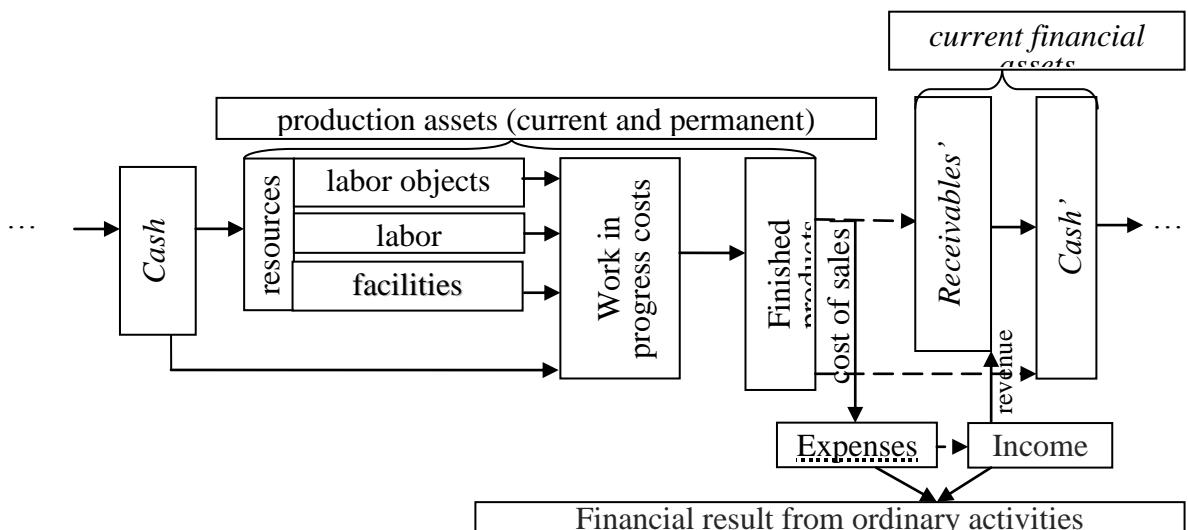


Figure 2: The sequence of cost transformation in the ordinary activities of a manufacturing enterprise

Assessment of property losses from the point of view of the possibility of overcoming the factors of their occurrence affects the procedure for recognizing them as a particular state of costs and reflecting them in accounting:

- losses incurred as a result of the recognized insurmountable consequences of agents of production (RICAP) refer to the technological process of production and participate in the formation of the current production asset (CPA);

- costs in work-in-progress or finished goods. Their amount is subject to debiting to cost accounts;

- the amount of unrecoverable losses as a result of irrational, untimely managerial decisions and actions of the organization's employees is inappropriate to be attributed to the accounts of production costs, since they do not participate in the creation of the asset and pass into the state of expenses of the period.

Costs in terms of losses of an economic entity, for which the disposal of the asset is expected, will not be reimbursed and are also included in the expenses of the period. Moreover, if there is sufficiently long period of time between the fact of establishing a high probability of losses and the moment of the expected disposal of the asset (or recognition of the corresponding liability), a cost reserve should be created (for example, for doubtful debts, for a decrease in the value of inventories, for the forthcoming payment of the awarded amounts for compensation for losses, etc.).

Figure 3 shows a diagram of the transition of property losses to a particular state of costs.

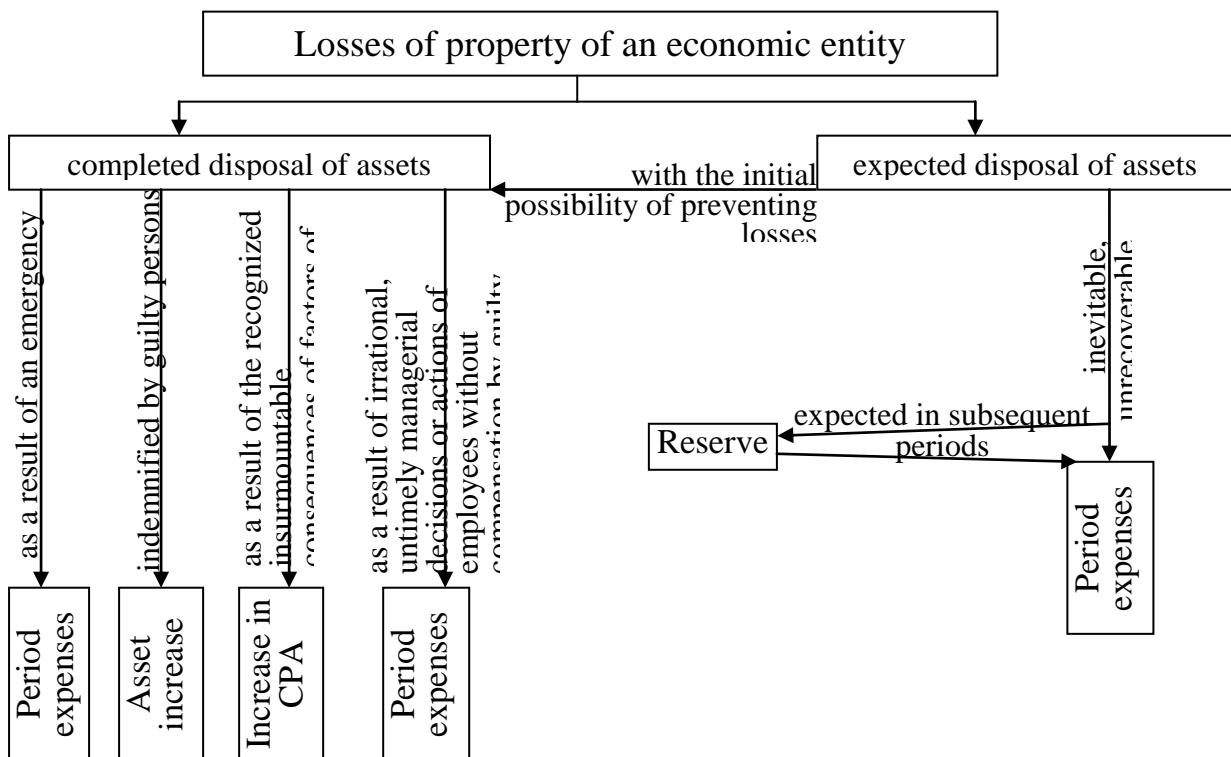


Figure 3: Transformation of losses of an economic entity into other cost states

Recognition of the losses of an economic entity as one of the cost states necessitates their inclusion in the developed model for transforming the costs of a manufacturing enterprise (Fig. 5).

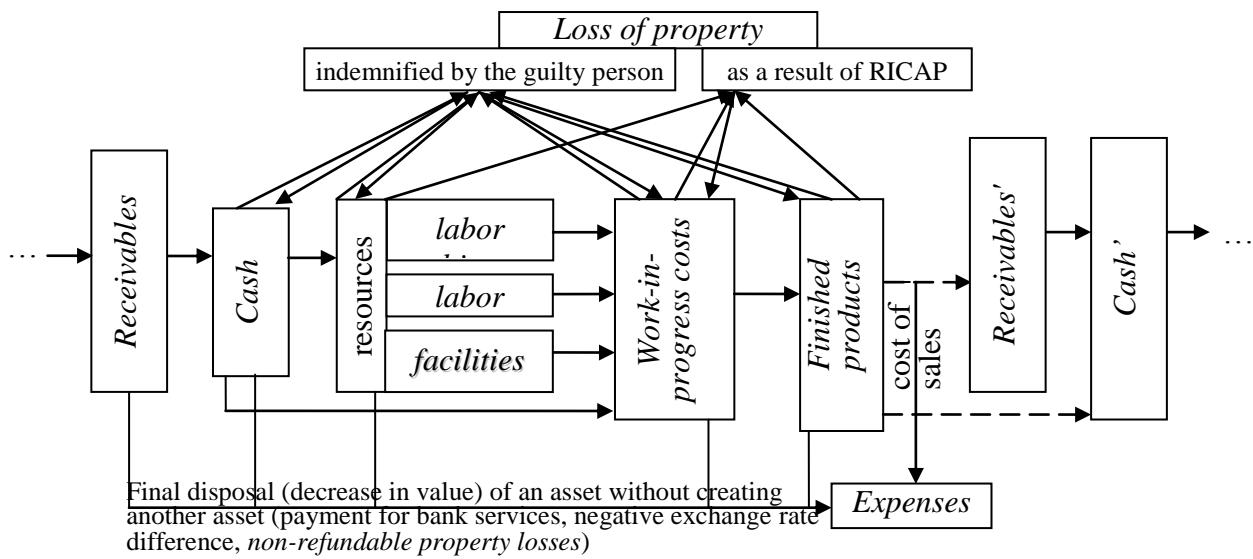


Figure 4: Generalized scheme for cost transformation of a manufacturing enterprise

The study of the essence of costs on the basis of the proposed model involves determining the characteristics of each of the properties of costs, options for their transformation, the impact on performance indicators, which will optimize the organization of the accounting and information space in specific conditions for making managerial decisions.

5. Conclusion

Thus, the formation of costs is a mechanism for the circulation of economic assets of an economic entity, as well as a value chain, based on cost transformation into a particular state: permanent production assets, current production assets, current financial assets, property losses and expenses. At the same time, it is fundamentally important to correlate the moment of recognition of costs with the fact of disposal of the asset.

The generalized scheme of cost transformation of a manufacturing enterprise obtained as a result of the study reflects the fundamental processes of the formation of various states of costs. The study of these processes will expand the understanding of the nature of the object under study, determine the characteristics and options for transforming cost properties into each other and, thus, optimize the basis for organizing the accounting and information space for management needs.

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