

## **EFFICIENCY OF INTERMEDIARY ACTIVITY OF AGRICULTURAL ENTERPRISES: METHODS AND ASSESSMENT INDICATORS**

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### **Abstract**

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The functioning of agricultural enterprises under conditions of risk and uncertainty requires a search for additional opportunities that enhance financial stability, among which integration is of great current interest. The integrative approach provides the implementation of synergistic effect from the cooperation between departments and structures of the enterprise as well as with the external institutions. The authors propose to combine elements of marketing, logistics and sales activities in complex functional system of intermediary activity. The paper provides the methods of calculation of the efficiency of intermediary activity and the specific assessment indicators, which are characterized by sequence analysis and variability as for the structure of the agricultural enterprise. The intermediary activity indicators resulting from the calculation will provide agricultural enterprises with valuable information regarding the level of efficiency of marketing, logistics and sales subsystems, the existing problems in the enterprise operation, will act as the basis for the future strategic direction of development of the company.

*Key words:* intermediary activity; agricultural enterprises; profitability level; efficiency; cost dynamics

### **Introduction**

Trends of global development of economy dictate new terms for the modern enterprise. The global market is characterized by high requirements of the consumer to the quality of products and services, specificity of demand, a predominance of supply over demand and increased competition. Previously, the financial result – profit was the main goal of any company. Modern market conditions, however, direct enterprise goals towards customer satisfaction. The level of such satisfaction is the main driver of competition on both the global and domestic markets. Due to such global changes in market conditions and activities, the basic tools that you can use to achieve the desired goal

and fundamental objectives of the enterprise also change. Earlier the price and quality of goods or services served as the main tool of competitive advantage. Currently, they use the combination of marketing, sales and logistics functions (the intermediary activity) as such a tool. However, the presence of the listed departments in the company structure does not provide a guaranteed competitive advantage, because the existence of any element in the structure does not ensure development, thus, creating only the preconditions for development. Therefore, intermediary activity should not just exist, it needs to be effective. As a result, there is the actual question of the essence of efficient intermediary activity, its components and approaches to the definition of performance.

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## Materials and Methods

Domestic and foreign scholars have studied issues for assessing the intermediary activity efficiency, focusing, though, most studies on the structural elements of an implementational activity – efficiency of marketing and logistics. Therefore, in our opinion, attention should be paid to the problem of determining the efficiency of the system of intermediary activity, which contains all the elements mentioned above. The main objective of this research is to justify in detail the essence of the efficiency of intermediary activity and define components of scientific approaches to the calculation of the intermediary activity efficiency of agricultural enterprises.

They define the concept of efficiency as the ratio of actual costs or the planned result. Efficiency is crucial in many fields of activity, thus acquiring different symptoms. In science and practice, they divide efficiency into economic, social and environmental.

Some scholars (Biletska, 2014; Donchak, 2009; Melnyk, 2004) link economic efficiency with the eventual result or the maximum benefit. Having analyzed the given approaches to the definition of economic efficiency, we can assume that economic performance is determined in order to conduct a comprehensive analysis of the results of the company's activities, compliance of the planned indicators with the actual ones, and the calculation of the effect of measures for the future.

We can use calculation of economic efficiency as an integral indicator of the activity of the economic entity as well as to determine the effectiveness of individual areas of the enterprise activity.

A number of scholars (Assel, 1999; Dykhtl, 1995; Kanishchenko, 2007; Lavrova, 2012) propose to use methods of financial and economic analysis by components and functional direction of marketing activities. The scientists consider the comparison of planned and actual costs and profits, and the impact of these indicators on sales volumes to be the basis of the calculation. Scientists (Keh, 2006) exploring marketing efficiency of service companies, have identified this figure as «key driver of productivity».

Some scientists linked the intermediary activity efficiency to price policy and existence of strategic benchmarks. The scientists Bo Zhou, Carl F. Mela, and Wilfred Amaldoss (2015) argued that: «In this case, we continue to find that less strategic firms can obtain higher profits».

Some researchers (Ansoff, 1999; Butenko, 2004; Lamben, 1996; Mac-Donald, 2000; Shapovalov, 2008) relied on the expert methods of calculation of marketing efficiency, which also included the determination of the efficiency through the adaptation level of marketing strategy to the

overall strategic goals of the company.

With the aim of improving the method of determining the agricultural enterprise intermediary activity efficiency, we have developed a system of indicators.

The efficiency of marketing activities of agricultural enterprises lies in a comprehensive assessment of their activities to determine the optimal combination of cost contributions for marketing activities in the total expenses of the company and the ratio of these expenses to the planned or actual result of the marketing. The planned result of the implementation of marketing activities is determined by taking into account the strategic goals of the enterprise and the external effects that may have an effect in a certain period. The income from marketing, which is determined through the difference in marketing costs and profit from marketing, we consider a result. Hence, the calculation of marketing efficiency (an indicator of the overall financial result) lies in the difference of income from marketing activities and marketing costs divided by the volume of production for a certain period:

$$EF_{n1-n2}^m = \left( \frac{M_{inc.n1}^r - M_{n1}^c}{IP_{n1}} - \frac{M_{inc.n2}^r - M_{n2}^c}{IP_{n2}} \right) \times 100\%, \quad (1)$$

where  $EF_{n1-n2}^m$  – (marketing efficiency) is the marketing efficiency for the analysed period;  $M^r$  – (marketing results) – a result from marketing,  $M^c$  – (marketing costs) – costs on marketing;  $IP$  – (implemented products) volumes of products sold for the analyzed period  $n1, n2$ .

The next components, which are included in the system of intermediary activity of agricultural enterprises, are agrologistics and agrosale. Accordingly, in the process of calculating the intermediary activity efficiency one should take into account the effects of the introduction of marketing, logistical and sales activities. That is, the system for the intermediary activity efficiency determination includes performance indicators of marketing, logistics and sales.

Regarding calculation of the logistics efficiency in the literature there is no uniform approach. For example, Alkema (2001) believes that «one can evaluate the efficiency of logistics according to several criteria, to which the scientist attributes the income (Index of income –  $I_i$ ), promptness (Index of a promptness –  $I_p$ ), correctness work (Index of correctness of a work –  $I_c$ ) and quality of use of human resources of logistics services (Index of a staff quality –  $I_s$ )». As a result, all these factors boil down to a single logistics efficiency index (Alkema 2009):

$$I = I_i \times I_p \times I_c \times I_q. \quad (2)$$

In the process of calculation Alkema (2009) proposes to use «the comparison of actual indicators with planned ones,

as well as rating index, which takes into account the level of importance of logistics activities”.

Tkachova (2011) believes, that one can evaluate logistics efficiency according to the following criteria: supply ( $E_{sp}$  – supply efficiency), production ( $E_p$  – production efficiency), sales ( $E_{sl}$  – sales efficiency), transport ( $E_t$  – transport efficiency) and storage ( $E_{sg}$  – storage efficiency).

The sales efficiency is another component of the system of evaluating the intermediary activity efficiency. The inclusion of this component provides a variation of the intermediary activity efficiency calculation.

Accordingly, we can conclude that the marketing subsystem is a key element of the intermediary activity, which includes a sales function. But in the absence of a marketing department or use of the third parties’ services), the sales function that focuses on sales, methods of sales promotion and the search for effective channels of sales is taken into account while calculating the intermediary activity efficiency.

## Results and Discussion

In a generalized sense the system of intermediary activity efficiency includes performance indicators of the three components (subsystems) marketing, sales and logistics. These efficiency subsystems are in constant interaction and exchange of information that is the defining factor of increase of efficiency due to creation of synergetic effect, when the interaction of each subsystem taken together is more efficient and effective than in the separate implementation of the functions of each component.

We can achieve the relationship of external and internal agro-environment through cooperation in certain subsystems of the intermediary activity (cooperation in logistics, marketing or sales).

Having analyzed all components of the intermediary activity efficiency system, we can conclude that the assessment of the effects of the implementation of the functions of each component can be expressed by the following formula common for each subsystem:

1. The calculation of the total financial result of the intermediary activity per unit of sold products, expressed through the percentage change over the period under consideration and used to determine the share of profits from marketing, logistics and sales activities per unit of sold products according to the result criteria (income), costs (taking into account the whole cost structure) and volume of sales. The formula of this indicator in our view will look as follows:

$$FR_{n1-n2}^{un.i.a.} = \left( \frac{(M_{inc.n1}^r - M_{n1}^c) + (S_{inc.n1}^r - S_{n1}^c) + (L_{inc.n1}^r - L_{n1}^c)}{IP_{n1}} \right) - \left( \frac{(M_{inc.n2}^r - M_{n2}^c) + (S_{inc.n2}^r - S_{n2}^c) + (L_{inc.n2}^r - L_{n2}^c)}{IP_{n2}} \right) \times 100\%, \quad (3)$$

where  $FR_{n1-n2}^{un.i.a.}$  – total financial result per unit of sold products during the analyzed period  $n1 - n2$ ;  $M_{inc.n}^r$  – the financial result of the marketing activities (income),  $M^c$  – marketing costs;  $S_{inc.n}^r$  – the financial result of the sales activities (income),  $S^c$  – sales costs;  $L_{inc.n}^r$  – the financial result of the logistics activities (income),  $L^c$  – logistics costs;  $IP$  (implemented products) – volumes of sold products over the analyzed period  $n1, n2$ .

2. The profitability level of intermediary activity by profit margin determines the economic efficiency of marketing, logistics and sales costs that is the level of return on assets for the analyzed period:

$$PLM_{n1-n2}^{i.a.} = \frac{M_{pr.n1}^r + S_{pr.n1}^r + L_{pr.n1}^r \times 100}{M_{n1}^c + S_{n1}^c + L_{n1}^c} - \frac{M_{pr.n2}^r + S_{pr.n2}^r + L_{pr.n2}^r \times 100}{M_{n2}^c + S_{n2}^c + L_{n2}^c}, \quad (4)$$

where  $PLM_{n1-n2}^{i.a.}$  – the profitability level of intermediary activity by profit margin;  $M_{pr.}^r, S_{pr.}^r, L_{pr.}^r$  – financial result (gross profit) of marketing, sales and logistics activities.

3. Profitability of intermediary activity by net income characterizes the amount of profit by monetary unit of output sold and is calculated by the ratio of intermediary activity net income and marketing, sales and logistics activities net income:

$$PLM_{n1-n2}^{i.a.} = \frac{(M_{inc.}^r - M^c) + (S_{inc.}^r - S^c) + (L_{inc.}^r - L^c)}{M_{inc.}^r + S_{inc.}^r + L_{inc.}^r} = \frac{M_{pr.}^r + S_{pr.}^r + L_{pr.}^r}{M_{inc.}^r + S_{inc.}^r + L_{inc.}^r}, \quad (5)$$

where  $PLM_{n1-n2}^{i.a.}$  – indicator of intermediary activity profitability per unit of financial result.

4. We should not divide cost indicator (cost minimization / profit maximization) per unit of sold products into cost categories. However, when structure of cost item is available, respectively, the rate of cost minimization is to be calculated separately for each component, or in totality. We propose to include in the minimization indicator calculation such categories as implemented products (IP), income (I), production costs (PC), logistics costs (LC) and marketing and sales costs (MSC). They structure costs on a functional basis (logistics costs, sales costs, production costs) to reflect the degree of

influence, dynamics and changes in the structure of costs for general economic activities of the company and its results. Given these components the formula for calculation of the intermediary activity costs will be as follows:

$$\text{MINMAX}_{n1-n2} = \left( \frac{I_{n1} - (PC_{n1} + LC_{n1} + MSC_{n1})}{IP_{n1}} - \frac{I_{n2} - (PC_{n2} + LC_{n2} + MSC_{n2})}{IP_{n2}} \right) \times 100\%. \quad (6)$$

Cost indicator calculation (cost minimization / profit maximization  $\text{MINMAX}_{n1-n2}$  is similar in its content to the overall financial result per unit of sold products ( $\text{FR}_{n1-n2}^{\text{um.i.a.}}$ ). However, the main difference added to  $\text{MINMAX}_{n1-n2}$  is the application of the notion of constant – basic period (b. p.) and consideration in the process of calculating the values of total income and production costs. The use of basic period allows identifying the influence of intermediary activity costs on the result. Based on this formula  $\text{MINMAX}_{n1-n2}$  is complemented by the value of the basic period for such components as income (I), implemented products (IP), production costs (PC). Marketing and sales costs values (marketing and sales, MSC) and logistics costs (LC) stay unchanged, and their change will reflect the influence on the result (income per unit of sold products) – which will be the expression of changes in the interest of cost minimization and profit maximization of intermediary activity. As a result, the formula for the calculation of the costs of intermediary activity (the sales and logistics costs) will look as follows:

$$\text{MINMAX}_{n1-n2}^{\text{CIA}} = \left( \frac{I^{\text{b.p.}} - (PC^{\text{b.p.}} + LC_{n1} + MSC_{n1})}{IP^{\text{b.p.}}} - \frac{I^{\text{b.p.}} - (PC^{\text{b.p.}} + LC_{n2} + MSC_{n2})}{IP^{\text{b.p.}}} \right) \times 100\%. \quad (7)$$

The formula for calculating the dynamics of sales costs will be as follows:

$$\text{MINMAX}_{n1-n2}^{\text{MSC}} = \left( \frac{I^{\text{b.p.}} - (PC^{\text{b.p.}} + LC^{\text{b.p.}} + MSC_{n1})}{IP^{\text{b.p.}}} - \frac{I^{\text{b.p.}} - (PC^{\text{b.p.}} + LC^{\text{b.p.}} + MSC_{n2})}{IP^{\text{b.p.}}} \right) \times 100\%. \quad (8)$$

At the same time, the dynamics of the logistics costs will be determined by the following formula:

$$\text{MINMAX}_{n1-n2}^{\text{LC}} = \left( \frac{I^{\text{b.p.}} - (PC^{\text{b.p.}} + LC_{n1} + MSC^{\text{b.p.}})}{IP^{\text{b.p.}}} - \frac{I^{\text{b.p.}} - (PC^{\text{b.p.}} + LC_{n2} + MSC^{\text{b.p.}})}{IP^{\text{b.p.}}} \right) \times 100\%. \quad (9)$$

Intermediary activity costs dynamics indicator (in % terms) shows the impact of decrease/increase of costs on the final result (income) assuming stable rates of production costs, total income and volumes of sales.

The calculation of these indicators may be partial, because the calculation algorithm will depend on the organization's structure and activities. In the case of using cooperation in a particular area of intermediary activity, or hiring the services of third parties, definition of the efficiency indicator may be appropriate to search for new solutions regarding the structure of intermediary activity, namely its restructuring.

Consistency of indicators in the above formulae for calculating the intermediary activity costs dynamics ( $\text{MINMAX}_{n1-n2}^{\text{CIA}}$ ,  $\text{MINMAX}_{n1-n2}^{\text{MSC}}$ ,  $\text{MINMAX}_{n1-n2}^{\text{LC}}$ ) is required for a clear vision of the degree of influence of changes in the cost structure of the enterprise on the final financial result. Accordingly, if a number of indicators such as income, production volumes and production costs are reflected in accordance with the criterion of the basic period, it will be possible to see the effect of changes in the share of sales costs (marketing and distribution) and logistics costs on the final result (profit change) during the analyzed period in reference to basic value. Of course, in practice, there is no absolute regularity of income, production costs and sales volume, but for analysis and display of effects of changes in the cost structure for the intermediary activity, use of this cost dynamics formula may be appropriate.

To determine the interrelated change of the components of the intermediary activity, we propose to calculate its efficiency using the integral indicator:

$$\text{IEF}^{\text{i.a.}} = \sqrt[3]{\text{EF}^{\text{M}} \times \text{EF}^{\text{S}} \times \text{EF}^{\text{L}}}. \quad (10)$$

where  $\text{IEF}^{\text{i.a.}}$  – integrated efficiency indicator;  $\text{EF}^{\text{M}}$  – marketing efficiency indicator;  $\text{EF}^{\text{S}}$  – sales efficiency indicator;  $\text{EF}^{\text{L}}$  – logistics efficiency indicator. Logistics ( $\text{EF}^{\text{L}}$ ) and sales efficiency indicators ( $\text{EF}^{\text{S}}$ ) are determined according to marketing efficiency calculation ( $\text{EF}^{\text{M}}$ ), which is shown in Formula 1.

With the help of the integral indicator of intermediary activity efficiency, it is possible to evaluate the main interrelated components of the intermediary activity efficiency system, i. e. marketing, sales and logistics.

## Conclusion

Analysis of approaches to determining the marketing, logistical, and sales efficiency measures has provided a clear understanding of the structure of parameters used in the calculation of the intermediary activity efficiency. In our opin-

ion, such indicators of the enterprise activity, as the volume of production and sales, the overall financial result (profit), gross profit, production costs, sales costs (sales and marketing), marketing and logistics costs, comparative period (base period), and goodwill should be referred to the basic ones.

The information base, the effectiveness and efficiency of information exchange, the degree of interaction between intermediary subsystems (departments of marketing, sales and logistics), the impact of external factors, and a synergistic effect are the main indicators of expert evaluation, from our point of view. The totality of the core indicators determines the overall efficiency and the possibility of its increase in future periods. Thus, they usually determine the intermediary activity efficiency by its structure, the interaction of elements in the internal environment and communication of the system with agro-environment of external influences (due to the peculiarities of the agrosphere and the degree of cooperation, if it is used in the analyzed period, or the need for cooperation with respect to a particular structural element). Analysis and evaluation of the intermediary activity efficiency serves as an important component of the functioning of the enterprise, provides the definition of the further strategic direction of development of the company, helps to identify problems in the enterprise, forms the basis for the development of strategic and tactical goals for future periods, which would provide foresight of future problems and is the main indicator of efficiency of the marketing, sales and logistics activities.

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