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# The Choice of Strategic Economic Areas of a Meat Processing Enterprise

# La elección de áreas económicas estratégicas de una empresa de procesamiento de carne

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#### **Content**

- 1. Introduction
- 2. Methodological Framework
- 3. Results
- 4. Conclusion

References

#### **ABSTRACT:**

In the market conditions, it is crucial for business entities and a company's capabilities to have the right choice of the strategic areas of management. The peculiarity of strategic approach is to account for a much larger number of criteria for assessing the sales area and its assessment of both the current and long-term perspective in the development. It determines the strategic potential of the company and assesses the risk of quite a significant investment in the development of distribution. The problem of objective choice of strategic economic areas is essential as errors in this kind of strategic decisions have measurable financial consequences and even threaten bankruptcy of the enterprise. The article presents the author's method of evaluating of strategic economic areas using the criteria of game theory and the mixed strategy, which has been tested at the regional meat processing food industry. **Keywords:** strategy; economic area; competition; matrix game theory

#### **RESUMEN:**

En las condiciones del mercado, es crucial para las entidades empresariales y las capacidades de una empresa tener la elección correcta de las áreas estratégicas de gestión. La peculiaridad del enfoque estratégico es dar cuenta de un número mucho mayor de criterios para evaluar el área de ventas y su evaluación tanto de la perspectiva actual como a largo plazo en el desarrollo. Determina el potencial estratégico de la empresa y evalúa el riesgo de una inversión bastante significativa en el desarrollo de la distribución. El problema de la elección objetiva de las áreas económicas estratégicas es esencial, ya que los errores en este tipo de decisiones estratégicas tienen consecuencias financieras medibles e incluso amenazan la quiebra de la empresa. El artículo presenta el método del autor para evaluar las áreas económicas estratégicas utilizando los criterios de la teoría de juego y la estrategia mixta, que ha sido probada en la industria alimentaria regional de procesamiento de

**Palabras llave**: estrategia; área económica; competencia; Teoría de juegos matriciales

#### 1. Introduction

Sales of products as part of business is important for the company, since sales volume determines the other enterprise performance (profits, profitability level and the amount of income) [1]. Determination of the potential distribution areas of production is advisable in cases of insufficient information on the number and users' location, and it is possible to reduce the commercial risk level in the course of overcoming market barriers that need to conduct address advertising targeting or advisable exclusive distribution of products in certain geographical areas [2].

The theory of strategic economic areas (hereinafter - SEA) has been proposed by the American scientist I. Ansoff in the early 70-ies of XX century. Among the Russian theorists and economists, the works of G.L.

Bagiev, O.S. Vikhansky, A.P. Gradov and others are devoted to this issue [3-5].

Several authors, specifying the concept of the strategic economic areas, consider it as a separate segment of the market to which the organization has or wants to gain access [6,7].

Based on this approach, it is difficult to identify the key difference between a strategic area of management and a marketing segment.

In a broader sense, a strategic economic area is considered as a part or a segment of the external environment of the organization to which the organization has or wants to get access [8-12].

There is also an opinion that SEA is a business or a group of businesses implemented by the companies, related to the technological and market basis, the products of the same assortment line [13].

Strategic economic areas are allocated in the process of strategic segmentation, whose aim is the choice of the strategic areas for activities, in which the organization is the most competent, therefore, can achieve the desired results.

To highlight a strategic economic area, I. Ansoff initially offered two parameters (so-called product-market combination): products, markets.

Thus, for the choice of strategic economic area the following parameters can be used: the need (product function), technology, categories of customers, geographic markets [14].

Among the factors used for determining of the areas of potential product sales size, one can identify the following factors:- price per unit;

quality of product manufacturing;

consumer properties of products;

indicators of economic efficiency;

factors of international trade;

the conditions for the system of production purchases;

the terms of payment and delivery;

time customer service;

quality of service [2].

On the basis of the compilation of the above determinations with regard to the enterprises-processors of agricultural raw materials, we came to the conclusion that a strategic economic area of an agricultural organization is a promising field of products marketing of processing of agricultural raw materials in which it operates or plans to operate in order to achieve the desired results by providing a higher competitiveness.

The proposed definition is based on two main principles of the choice of the strategic economic area of agricultural organization that allows you to fully reveal its essence:

firstly, a strategic economic area must be forward-looking and contain a potential for development and growth of the organization;

secondly, for the organization an area of activity is strategic if only it has sufficient capacity and competitiveness to achieve its goals there.

## 2. Methodological Framework

To assess the strategic economic area we used the method of the payment matrix, an analysis of the costs of the business strategy of cooperation with regional enterprise customers in the potential strategic economic area. The problem of determining the optimal strategy is reduced to the detection of the minimum of expected losses in conditions of uncertainty regarding the behavior of the market.

The choice of the company strategy is dependent on consumer behavior in the strategic economic area, expressed quantitatively in terms of the theory of probability: V1 – SEA prospects, measured in the range from 0 to 1; V2 = 1-V1 - degree of unpromising areas of strategic management. Numbers V1  $\mu$  V2, equal to the sum of the unit, show how likely a customer applies pure strategies P1 and P2 in each batch supplies. The complex of strategies P1 and P2, having an evaluation of the probability of V1 and V2 is called a mixed strategy. Points V1 = 1 and V2 = 0 correspond to the first pure strategy (when consumers are absolutely loyal) - P1; points V1=0  $\mu$  V2=1 correspond to the second pure strategy (when SEA is absolutely unpromising) - P2; all points 0 < V1 < 1 within a segment correspond to a mixed strategy.

To assess the reliability and veracity of the calculations we used the criteria of game theory. Selection criterion

in this case must be agreed to the maximum extent with the specific problems and research purposes.

In particular, if a very important decision is taken, and even minimum risk is not allowed, one should apply Wald criterion (criterion of the careful observer). If a particular risk is acceptable, and the head is going to invest in the proposed operation as many funds then not to be hurt that invested too little, one should choose Savage criterion (criterion of minimize regrets). Other known models are the choice of the Laplace criterion and Hurwitz criterion (subjective evaluation method of optimistic and pessimistic variants) [12,13].

### 3. Results

Meat processing - traditionally leading and well-known industry for its quality and taste properties in Kirov region. In recent years, it has received additional impetus to the development thanks to the dialogue of local authorities and businesses interested in livestock development [14]. In expanding of the production volumes of the agro-industrial complex of Kirov region, rural producers, processing enterprises and wholesale trade companies will be forced to go to the markets of other regions, entering competition with representatives of other regions. The study of the problem of choosing a strategic economic area is considered by us as an example of the enterprise of the meat industry of Kirov region. From the point of view of market prospects the following study analyzes sales expansion area: the Northern Urals (SEA No. 1), Komi Republic (SEA No. 2), Nizhny Novgorod region (SEA No. 3).

Analysis of sales of the company has revealed a problem - the shortfall of the realization plan due to incomplete use of resource potential and errors in planning of marketing activities.

In this situation, there are two strategic variants with respect to forecasting markets: P1 - optimistic, P2 - pessimistic with respect to four possible strategies for the enterprise:

- C1 maintaining the existing position;
- C2 modification of existing products;
- C3 decreasing of price;

sum

oversupply

C4 – integration, for the joint development of market opportunities.

Possible combinations of strategies based on development forecasts and the amounts of costs are presented in the table 1.

Next, using the payment method of the matrix, possible strategies for business cooperation with regional enterprise customers in the potential strategic economic areas are analyzed [15,16].

Thus, the problem of determining the optimal strategy reduces to the determination of the minimum expected losses in the face of uncertainty about the behavior of the key players in the market.

The choice of the company strategy of behavior depends on the behavior of buyers in the market that is quantified in terms of the theory of probability:

V1 – promising strategic areas of production, is measured in the range from 0 to 1;

V2 = 1 - V1 – the degree of unpromising production strategic areas

Numers V1 and V2, equal to the sum of the unit, indicate how likely customer-friendly policies P1 and P2 are applied in each batch of supplies. The set P1 and P2 strategies, with an assessment of the probabilities of V1 and V2 and their degree of implementation is called a mixed strategy. Points V1 = 1 and V2 = 0 correspond to the first pure strategy (when consumers are absolutely loyal) - P1; points V1 = 0 and V2 = 1 correspond to the second pure strategy (SEA is absolutely unpromising) - P2; all points 0 < V1 < 1 within a segment correspond to a mixed strategy. Analysis of all the options under consideration is presented in the Table. 2.

Calculation of the coordinates for constructing functions are presented in Table 3. Schedule of expected costs in the application of pure strategies against mixed strategies is presented in Figure 1. Determination of value V1:

Situation	Cost, RUB t	housand				
	Delivery	Losses from	Transportation	Travel	The costs of implementation	

expenses

costs

Total

of the planned

actions

Table 1. Costs of company "Zarechye" in strategic economic areas

Strategic economic area "the Northern Urals"							
C1-P1	0	0	0	0	0	0	
C1-P2	0	0	0	0	0	0	
C2-P1	3,000	0	20	2	150	3,172	
C2-P2	1,000	100	20	2	150	1,272	
C3-P1	2,700	0	20	2	75	2,797	
C3-P2	1,300	70	20	2	75	1,467	
C4-P1	2,500	0	10	2	40	2,552	
C4-P2	1,000	75	10	2	40	1,127	
Strategic ec	onomic area	"Komi Republic"					
C1-P1	0	0	0	0	0	0	
C1-P2	0	0	0	0	0	0	
C2-P1	1,500	0	15	0	150	1,665	
C2-P2	500	50	15	0	150	715	
C3-P1	1,350	0	15	1,5	75	1,441.5	
C3-P2	600	37.5	15	1,5	75	729	
C4-P1	1,000	0	5	1	40	1,046	
C4-P2	300	35	5	1	40	381	
Strategic ec	onomic area	"Nizhny Novgor	od region"				
C1-P1	0	0	0	0	0	0	
C1-P2	0	0	0	0	0	0	
C2-P1	2,000	0	13	0	150	2,163	
C2-P2	500	75	13	0	150	738	
C3-P1	1,800	0	13	1.5	75	1,889.5	
C3-P2	800	50	13	1.5	75	939.5	
C4-P1	900	0	5	1	40	946	
C4-P2	300	30	5	1	40	376	

**Table 2.** Payment matrix results in the strategic economic areas

Ctratagy	SEA No. 1		SEA No. 2		SEA No. 3	
Stratagy	P1	P2	P1	P2	P1	P2
C1	0	0	0	0	0	0
C2	- 3,172	- 1,272	-1,665	-715	-2,163	-738
C3	- 2,797	- 1,467	-1,441.5	-729	-1,889.5	-939.5
C4	- 2,552	- 1,127	-1,046	-381	-946	-376

C2 = C3

 $-1,272 - 1,900 \times V1 = -1,330V1 - 1,467$ 

 $-570 \times V1 = -195$ ; V1 = 0.34

Thus, if the loyalty of the first market V1 < 0,34, it is more profitable to use the second strategy; if the loyalty of the first market  $0.34 \le V1 \le 1$  - more profitable to use the third one. The broken line ABD indicates how enterprise costs vary with changing market first loyalty from 0 to 1.

**Table 3.** Coordinates of the schedule of expected costs

Strategies	The value of V	Model	Coordinates
C2	V1 = 1, V2 = 0 V1 = 0, V2 = 1	Expenses = $-3,172 \times V1 - 1,272 \times V1 - 1,272 \times (1 - V1) = -1,272 - 1,900 \times V1$	(1; -3,172) (0; -1,272)
C3	V1 = 1, V2 = 0	Expenses = -2,797 x V1 - 1,467	(1; -3,172)
	V1 = 0, V2 = 1	x (1 - V1) = -1,330 x V1 - 1467	(0; -1,272)
C4	V1 = 1, V2 = 0	Expenses = $-2,552 \times V1 - 1,127$	(1; -2,552)
	V1 = 0, V2 = 1	$\times (1 - V1) = -1,425 \times V1 - 1,127$	(0; -1,127)

At loyalty of the first market V1 = 0.34 expenses of the enterprise of all possible are maximal (for a reasonable choice of its policies). Values of mixed strategies are defined similarly for other options (Fig. 2):

SEA No. 2. C2:  $-950 \times V1 = 715$ ; C3:  $-712.5 \times V1 = 729$ ; C4:  $-665 \times V1 = 381$ . V1 = 0.06

SEA No. 3. C2:  $-1,425 \times V1 = 738$ ; C3:  $-950 \times V1 = 939.5$ ; C4:  $-570 \times V1 = 376$ . V1 = 0.42

If the degree of optimism in the second market V1  $\leq$  0.06, it is more profitable to use the second strategy; at  $0.06 \leq V1 \leq 1$  – the third one. If the degree of optimism in the second market V1  $\leq$  0.42, it is more profitable to use the second strategy; at  $0.42 \leq V1 \leq 1$  – the third one.

Fig. 1. Mixed strateges of SEA No.1

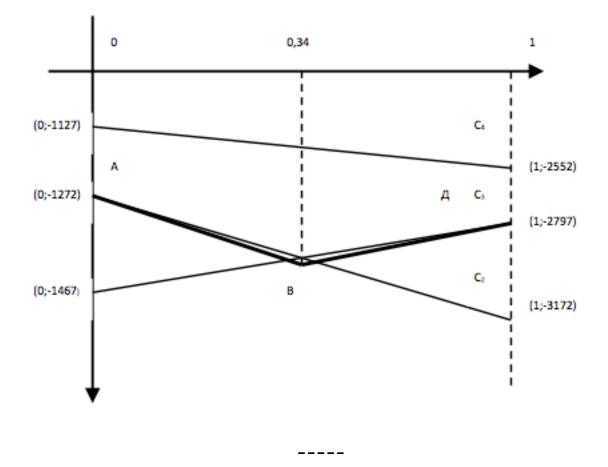
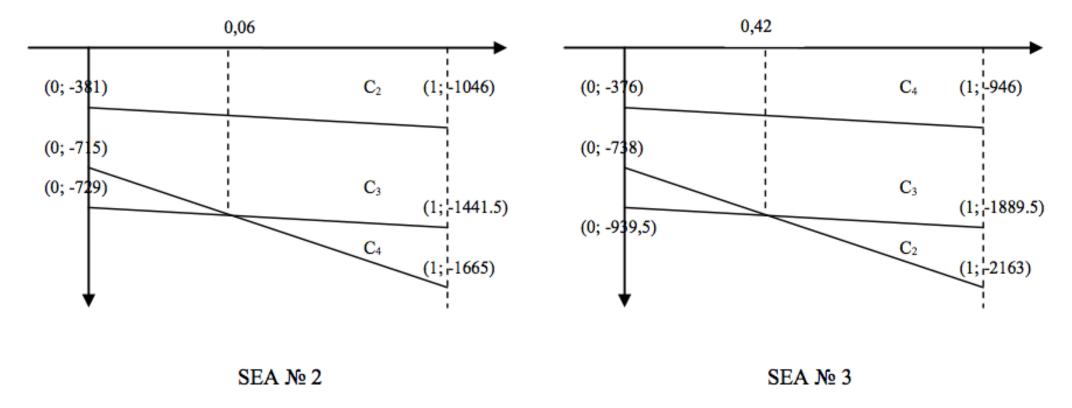


Fig. 2. Mixed strateges of SEA No.2 и SEA No.3



To assess the reliability and accuracy of the calculations, the criteria of game theory are determined [17]. Selection of the particular criterion must be agreed to the maximum extent with the specific problems and research purposes. In particular, if a very important decision is taken, and even minimal risk is unacceptable, it is necessary to apply the Wald criterion (criterion of the careful observer). If a particular risk is acceptable, and the head is going to invest in the proposed operation of the average number of resources, Savage criterion is selected (criterion of minimize regrets). Other known models of the choice are Laplace criterion and Hurwitz criterion (subjective evaluation method of optimistic and pessimistic variants) [18]. According to the analysis of these criteria, conclusions on the choice of the strategies are formulated.

The calculations for the meat-processing enterprise revealed that the most promising is the strategy of integration to enter regional markets (Table 4).

The advantage of the methods based on the application of the criteria for decision-making is their simplicity. However, it should be noted that when there is a large number of steps for decision-making, and with a large number of possible states of the economic factors, the use of this approach is difficult. The disadvantage of these methods is the lack of any general advice on choosing the optimal strategy of criterion selection. To select the most promising strategic economic areas in addition to identifying specific parameters, it is also necessary to determine the significance of each of them (Table 5).

Strategies	Wald crite	rion		Maximun	criterion		Savage crit	erion		The
	P1	P2	Min	P1	P2	Max	P1	P2	Maximum risk	number of decision taken
SEA No.1 -	the Northern	Urals								
C2	- 3172	- 1272	-3172	- 3172	- 1272	-1272	-3172/ 620	-1272/ 145	620	0
C3	- 2797	- 1467	-2797	- 2797	- 1467	-1467	-2797/ 245	-1467/ 340	340	0
C4	- 2552	- 1127	-2552	- 2552	- 1127	-1127	-2552/ 0	-1127/ 0	0	3
	-2552	-1127	-							
SEA No.2 -	Komi Republi	С								
C2	-1665	-715	-1665	-1665	-715	-715	-1665/619	-715/334	619	0
C3	-1441,5	-729	-1441,5	-1441,5	-729	-729	-1441,5/4,5	-729/348	348	0
C4	-1046	-381	-1046 (maxmin)	-1046	-381	-381 (maxmax)	-1046/0	-381/0	0	3
	-1046 (minmax)	-381	-							
SEA No.2 -	Nizhny Novgo	orod region								
C2	-2163	-738	-2163	-2163	-738	-738	-2163 / 1217	-738 / 362	1217	0
C3	-1889,5	-939,5	-1889,5	-1889,5	-939,5	-939,5	-1889,5 / 943,5	-939,5 / 563,5	943,5	0
C4	-946	-376	-946 (maxmin)	-946	-376	-376 (maxmax)	-946 / 0	-376 / 0	0 (minmax)	3
	-946 (minmax)	-376	-							

**Table 5.**Significance and indicators for assessment of attractiveness of the selected economic areas

Indicators	Index value	SEA No.1	SEA No.2	SEA No.3
Quantitative indicators				
Market capacity, ths. tons	0.20	144	62	163
The level of meat products supply, %	0.11	63	23	66
The production potential of the segment,	0.09	72	120	85

tons				
Sales profitability, %	0.05	16	30	22
Qualitative indicators				
The ability to sell products (availability)	0.18	5.7	8.5	6.3
The level of competition, points	0.16	7.3	4.8	7.1
The level of risk, points	0.14	4.3	2.5	4.8
Optimality of the product portfolio offered by the company in this segment	0.07	9.58	8.56	6.34

For comparability of quantitative and qualitative indicators the above factors are calculated (Table 6).

**Table 6.** Factors contained in the strategic economic areas

Indicators	Index value	SEA No.1	SEA No.2	SEA No.3				
Quantitative indicators								
Market capacity, ths. tons	0.20	0.88	0.38	1.00				
The level of meat products supply, %	0.11	0.95	0.35	1.00				
The production potential of the segment, tons	0.09	0.60	1.00	0.71				
Sales profitability, %	0.05	0.53	1.00	0.73				
Qualitative indicators.								
The ability to sell products (availability)	0.18	0.67	1.00	0.74				
The level of competition, points	0.16	0.66	1.00	0.68				
The level of risk, points	0.14	0.58	1.00	0.52				
Optimality of the product portfolio offered by the company in this segment	0.07	1.00	0.89	0.66				

provided maximization index:

$$a_i = \frac{n_i}{n_{\text{max}}} \tag{1}$$

where ni- index value for each segment;

nmax- the maximum value of the index of the presented segments.

provided minimizing index:

$$a_i = \frac{n_{\min}}{n_i} \tag{2}$$

where ni- index value for each segment;

nmin- minimum value of the index of the presented 3 segments.

The profitability coefficient segment is then determined (Table 7)

 Table 7

 assessment of attractiveness of the selected economic areas

Indicators	Index value	SEA No.1	SEA No.2	SEA No.3				
Quantitative indicators	Quantitative indicators							
Market capacity, ths. tons	0.20	0.18	0.08	0.20				
The level of meat products supply, %	0.11	0.10	0.04	0.11				
The production potential of the segment, tons	0.09	0.05	0.09	0.06				
Sales profitability, %	0.05	0.03	0.05	0.04				
Qualitative indicators								
The ability to sell products (availability)	0.18	0.12	0.18	0.13				
The level of competition, points	0.16	0.11	0.16	0.11				
The level of risk, points	0.14	0.08	0.14	0.07				
Optimality of the product portfolio offered by the company in this segment	0.07	0.07	0.06	0.05				
Attractiveness factor of strategic areas of management	x	0.74	0.80	0.77				

Closer KB to 1, the more profitable segment for the enterprise based on the cost level of the importance of the potential profitability of the segment, the opportunities for further growth, etc.

$$K_{e} = \frac{\sum_{i=1}^{k} a_{ij} \times w_{i}}{\sum_{i} w_{i}},$$
 (3)

where wi- weight parameters, which are determined individually for each company in each case;

k - the number of indicators;

j – the estimated number of segments.

Therefore, it is more profitable to start the development of new markets, for example, in the Komi Republic market, where the company will be able not only to operate successfully but to improve the efficiency of all its activities.

Strategic choice must pass an examination on the subject of risk assessment. For such purposes the cost approach is thought not to be complete enough in the market conditions. That means the relevance of the development and adaptation of risk assessment tools based on market strategy investment approach is very high.

# 4. Conclusion

The market of meat and meat products is the most important segment of the food market in the country. Based on the features of the implementation of market relations in the meat industry, the experience of foreign countries, the overall strategy of formation of market economy in the meat industry should be determined by a combination of market self-regulation, based on the demand, supply, free competition, regulatory and economic instruments - fiscal subsidies, grants, preferential credits, tax sparing.

Considering the problem of selecting strategic economic areas, we have come to believe that in economic activity of meat processing enterprises of Kirov region responsible authorities approach to this issue intuitively, not using the available modern economics tools to improve the validity and rationality of a decision. However, the problem of objective selection of strategic economic areas is important, since errors in this kind of strategic decisions have measurable financial consequences and even threaten bankruptcy of the enterprise. Analysis of existing approaches allowed us to create the author's technique for solving the problem of choosing a strategic economic area on the basis of synthesis of mixed strategies and criteria of game theory. It was tested on the example of one of the enterprises of the regional market of meat production. In our opinion, this technique is more strategic and will make the selection of markets more grounded and focused on competitiveness. It allows to extend this experience in the activities of companies in other industries.

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[Index]

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