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# COMPARISON OF METHODS FOR DETERMINING THE COMPETITIVENESS OF ENTERPRISES TO DETERMINE MARKET STRATEGY

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## ABSTRACT

*Competition is the driving force behind the development of objects and market players. The ultimate goal of any enterprise is to achieve certain results in a competitive struggle, depending on the competitiveness of the company's goods and services, that is, on how much they are better compared to their counterparts. The success of a company's competitive advantages can be assessed by fully assessing the strengths and weaknesses of the company's position in the competition and comparing the results of the analysis with those of competitors. Analysis can be done using analytical or/and graphical way. The article discusses key success factors (or competitive advantages) and on the example of the enterprise, the two of methods for determining the competitiveness (analytical, graphical) are compared.*

**Key words:** Analytical Method, Graphical Method, Competitiveness, Competitive Advantages, Strategy.

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## 1. INTRODUCTION

Competitiveness is the ability of an enterprise to form and maintain competitive advantages on an appropriate level, based on the introduction of innovations, based on unique intangible assets, intellectual and social capital, as well as image and reputation [1-3].

Competition is the driving force behind the development of objects and market players. The ultimate goal of any enterprise is to achieve certain results in a competitive struggle, depending on the competitiveness of the company's goods and services, that is, on how much they are better compared to their counterparts. Definition and evaluation of the competitiveness of products and enterprises are necessary for substantiation and decision-making in: complex market study; Estimated prospects for the sale of specific domestic products for domestic and foreign markets; establishment and correction of prices of new domestic products, export and import goods; the formation of policy makers in the field of quality and competitiveness, etc. [4-6] But the most important – is in determining the vector of a market strategy, because it is precisely from its correct definition that the activities of the company in the market depend on in the near future.

## 2. KEY SUCCESS FACTORS (COMPETITIVE ADVANTAGES)

Key success factors (or competitive advantages) are a list of factors that are characteristic of a particular industry, which give it advantages over other industries (for example, in the struggle for investment at the expense of greater profitability or speed of capital turnover), as well as one enterprise industry over others. These factors are not constant, they vary depending on: the characteristics of industries; market segments served, as well as time and stage of the "life cycle" of the industry and enterprise [7; 8].

Key success factors are based on: the scientific and technical level of production and product; marketing levels; management levels; organizational and technical level of production processes; financial and economic level of the enterprise; staff levels, etc. [9]

There are two types of competitive advantages:

Artificial competitive advantages: individual approach, advertising campaigns, warranty and so on.

Natural competitive advantages of the company: the cost of products, customers, competent leadership and so on.

There is a fairly well-established structure of competitive advantages of the company. At one time, Michael Porter [10] identified three main sources for developing a company's competitive advantages: differentiation, cost, and focus:

Differentiation. The implementation of this strategy of competitive advantages of the company is based on more efficient provision of services to the company's clients, as well as demonstration of the company's products in the best light.

Costs. The implementation of this strategy is based on the following competitive advantages of the company: minimum costs for employees, automation of production, minimum costs for scale, the ability to apply limited resources, as well as the use of patented technologies that reduce the cost of production.

Focus. This strategy is based on the same sources as the previous two, but the company's adopted competitive advantage covers the needs of a narrow circle of customers. Clients who are not in this group are either unhappy with such competitive advantages of the company, or they have no effect on them.

The success of a company's competitive advantages can be assessed by fully assessing the strengths and weaknesses of the company's position in the competition and comparing the results of the analysis with those of competitors. Analysis can be done using analytical or/and graphical way [11].

### 3. THE PREPARATORY STAGE OF ASSESSING THE COMPETITIVENESS OF ENTERPRISES

Compare the analytical and graphical way of assessing the competitiveness of enterprises. For the evaluation of enterprises on the factors of competitiveness we used the method of expert assessments [11-12].

Let us show an example of the use of methods in real industrial enterprises. The following enterprises of Ukraine were selected from leading manufacturers of dairy products [13]:

1. Lactalis Ukraine
2. Terra Food
3. Milk Alliance
4. Lustdorf
5. Danone Ukraine
6. Ternopil Dairy Plant

Further, a team of 20 experts were offered to evaluate such key success factors of competitiveness on a 10-point scale, where 0 is the lowest value and 10 is the highest.

A. Market share (parameter taken from official sources)

B. Product (quality, range)

C. Production potential (the volume of the possible production of milk and products at 100% load, the modernization of equipment and technology)

D. Dependence on suppliers (do they have their own milk production plants, how wide is the network of secondary suppliers - packaging, packaging)

E. Sales opportunities (existing geography of supplies and the possibility of its expansion)

For a general assessment of competitiveness, it is necessary to include factor E–Staff. However, it is difficult to assess personnel by the method of expert assessments; accordingly, this factor is not included in this study.

Next was the arithmetic average of expert estimates (Table 1).

**Table 1** Parametric rating of enterprises by competitive factors

Synthesis factor of competitiveness	Parametric unit rating of the enterprises					
	1	2	3	4	5	6
Market position	3.7	9.2	7.7	5.2	4.9	2.6
Product	8.8	6.8	9.2	7.4	7.3	7.5
Production potential	7.8	9.2	6.4	6.5	6.7	7.8
Dependence on suppliers	3.8	8.3	8.7	1.3	2.4	1.2
Sales opportunities	3.5	9.1	9.3	4.4	3.8	8.2

Also, by general discussion, the experts assigned the rank to each factor: Market position – 0.08, Product – 0.27, Production potential – 0.3, Dependence on suppliers – 0.3, Sales opportunities – 0.05. Sum of ranks = 1

### 3.1 Analytical method of assessing the competitiveness of enterprises

To determine the company's competitiveness, in an analytical way, use the following formulas.

The total score for all the integrated factors for the i-th enterprise in the market is as follows:

$$S_i = I_{Ai} + I_{Bi} + I_{Ci} + I_{Di} + I_{Ei}$$

where

$I_{Ai}, I_{Bi}, I_{Ci}, I_{Di}, I_{Ei}$  – integrated (group) indicators of the corresponding factor, which will be calculated as follows:

$$I_{Xi} = g_{Xi} * R_{Xi}$$

where

$g_{Xi}$  – parametric unit rating of the enterprises:

$R_{Xi}$  – the rank of the factor

Thus for the enterprises we obtain the following data:

$$S_1 = 0,08 * 3.7 + 0,27 * 8.8 + 0,3 * 7.8 + 0,3 * 3.8 + 0,05 * 3.5 = 6.327$$

$$S_2 = 0,08 * 9.2 + 0,27 * 6.8 + 0,3 * 9.2 + 0,3 * 8.3 + 0,05 * 9.1 = 8.277$$

$$S_3 = 0,08 * 7.7 + 0,27 * 9.2 + 0,3 * 6.4 + 0,3 * 8.7 + 0,05 * 9.3 = 8.095$$

$$S_4 = 0,08 * 5.2 + 0,27 * 7.4 + 0,3 * 6.5 + 0,3 * 1.3 + 0,05 * 4.4 = 4.974$$

$$S_5 = 0,08 * 4.9 + 0,27 * 7.3 + 0,3 * 6.7 + 0,3 * 2.4 + 0,05 * 3.8 = 5.283$$

$$S_6 = 0,08 * 2.6 + 0,27 * 7.5 + 0,3 * 7.8 + 0,3 * 1.2 + 0,05 * 8.2 = 5.343$$

Next, we find the company with the highest  $S_i$ , i.e. leader and assign him the coefficient of competitiveness = 1. In order to find the competitiveness of each of the evaluated enterprises, it is necessary, using the formula, to correlate each combined factor estimate with the maximum assessment of the leading enterprise:

$$k_{ci} = \frac{S_i}{S_{max}}$$

Based on the results of calculations, the results of calculating the coefficients of competitiveness of enterprises are ranked and the corresponding strategy is selected for such conditions:

*Leader* ( $k_c = 1$ )

*Market follower* ( $0.9 < k_c < 1$ )

*Market challenger* ( $0.5 < k_c < 0.9$ )

A *market leader* is the company with the largest market share in the industry. Sometimes there is no obvious leader in the industry, then several companies are considered as a leader. To remain a market leader, an enterprise must: First, expand the market - either by attracting new customers, or finding new uses for existing products, or increasing the use of existing products; and secondly, to increase its market share; thirdly, to constantly protect its business from the rivals' attacks with the use of various defense strategies.

*Market challenger* is an enterprise in an industry that is struggling to increase its market share by becoming one of the leaders. To do this, the company must have certain advantages over a market leader (offer the best product, sell the product at a lower price, etc.).

## Comparison of Methods For Determining The Competitiveness of Enterprises To Determine Market Strategy

*Market follower* – a company that pursues a policy of pursuing industry leaders, prefers to maintain its market share without taking risky decisions. Advantages of a market follower's strategy are that it can rely on the experience of market leaders, copy or improve the products and marketing actions of the leader - usually at a lower level of investment and risk.

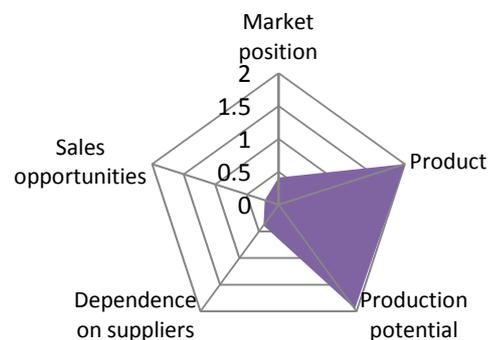
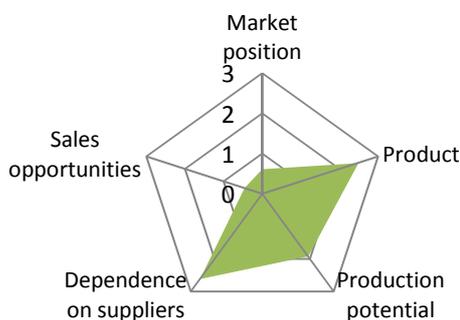
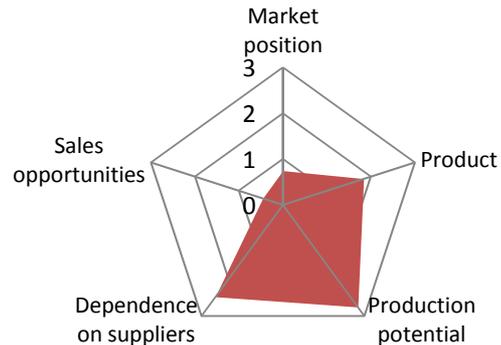
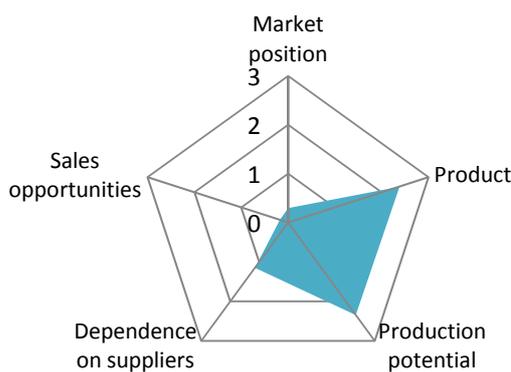
We calculate the coefficients of competitiveness for all enterprises and determine a market strategy for them (Table 2).

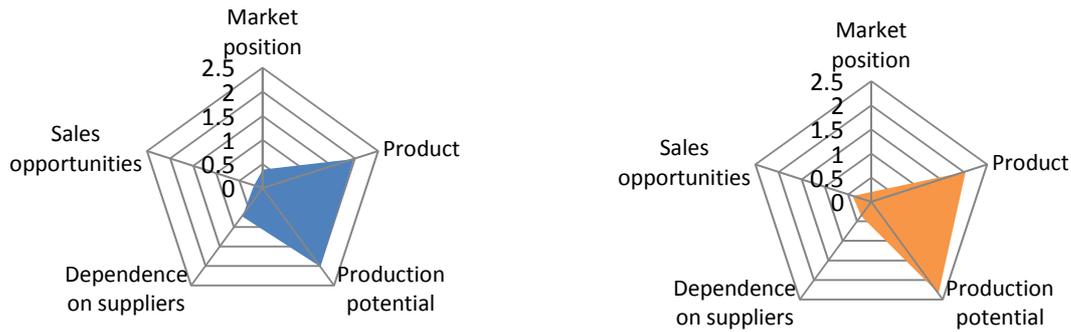
**Table 2** Parametric rating of enterprises by competitive factors

Enterprise	Competitiveness	Strategy
2	1,0000	Leader
3	$8.095 / 8.277 = 0,9780$	Market follower
1	$6.327 / 8.277 = 0,7644$	Market challenger
6	$5.343 / 8.277 = 0,6455$	
5	$5.283 / 8.277 = 0,6383$	
4	$4.974 / 8.277 = 0,6009$	

### 3.2 Graphic method of assessing the competitiveness of enterprises

The graphic way of presenting the level of competitiveness of an enterprise is to construct a polygon of competitiveness in the corresponding diagram (Fir. 1-6)

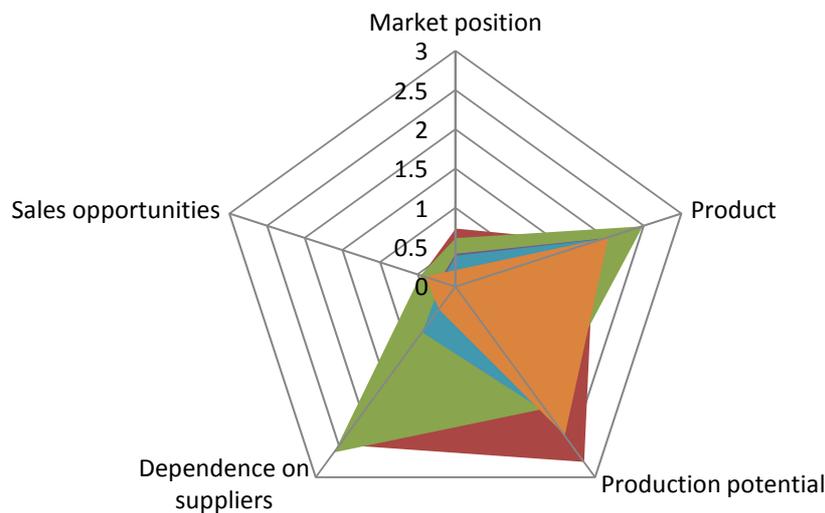




**Figure 1 – 6** Construction of a polygon of competitiveness for relevant enterprises (1-6)

A company with the highest degree of competitiveness will fit a polygon with a maximum area.

If you show the results in one diagram, then you can visually see that the leading enterprise is enterprise 2 (Fig. 7).



**Figure 7** Construction of a polygon of competitiveness for enterprises

Visually determine the areas of other enterprises is not possible, therefore, we calculate the area of the polygon according to the formula:

$$S_i = \frac{1}{2} \sin(R_{i1} * 360^\circ) * \sin(R_{i2} * 360^\circ) * I_{R1} + \dots + \frac{1}{2} \sin(R_{in} * 360^\circ) * \sin(R_{i1} * 360^\circ) * I_{Rn}$$

where

$g_{Xi}$  – parametric unit rating of the enterprises:

$R_{il}$  – the rank of the factor 1

$I_{Rl}$  – integrated indicator of the factor 1

To simplify further calculations, we calculate in advance:

$$\alpha \text{ Market position} = R_1 * 360^\circ = 0.08 * 360^\circ = 29^\circ; \sin 29^\circ = 0.4848$$

$$\alpha \text{ Product} = R_2 * 360^\circ = 0.27 * 360^\circ = 97^\circ; \sin 97^\circ = 0.9925$$

$$\alpha \text{ Production potential} = R_3 * 360^\circ = 0.30 * 360^\circ = 108^\circ; \sin 108^\circ = 0.9511$$

$$\alpha \text{ Dependence on suppliers} = R_4 * 360^\circ = 0.30 * 360^\circ = 108^\circ; \sin 108^\circ = 0.9511$$

$$\alpha \text{ Sales opportunities} = R_5 * 306^\circ = 0.05 * 360^\circ = 18^\circ; \sin 18^\circ = 0.3090$$

Calculate the area of polygons for all enterprises:

$$\begin{aligned} S_1 &= \frac{1}{2} * 0,4848 * 0,9925 * 0,296 + \frac{1}{2} * 0,9925 * 0,9511 * 2,376 + \frac{1}{2} * 0,9511 * 0,9511 \\ &\quad * 2,34 + \frac{1}{2} * 0,9511 * 0,3090 * 1,14 + \frac{1}{2} * 0,3090 * 0,4848 * 0,175 \\ &= 2.4316 \text{ square units} \end{aligned}$$

$$\begin{aligned} S_2 &= \frac{1}{2} * 0,4848 * 0,9925 * 0,736 + \frac{1}{2} * 0,9925 * 0,9511 * 1,836 + \frac{1}{2} * 0,9511 * 0,9511 \\ &\quad * 2,76 + \frac{1}{2} * 0,9511 * 0,3090 * 2,49 + \frac{1}{2} * 0,3090 * 0,4848 * 0,455 \\ &= 2.6919 \text{ square units} \end{aligned}$$

$$\begin{aligned} S_3 &= \frac{1}{2} * 0,4848 * 0,9925 * 0,616 + \frac{1}{2} * 0,9925 * 0,9511 * 2,484 + \frac{1}{2} * 0,9511 * 0,9511 \\ &\quad * 1,92 + \frac{1}{2} * 0,9511 * 0,3090 * 2,61 + \frac{1}{2} * 0,3090 * 0,4848 * 0,465 \\ &= 2.6074 \text{ square units} \end{aligned}$$

$$\begin{aligned} S_4 &= \frac{1}{2} * 0,4848 * 0,9925 * 0,416 + \frac{1}{2} * 0,9925 * 0,9511 * 1,998 + \frac{1}{2} * 0,9511 * 0,9511 \\ &\quad * 1,95 + \frac{1}{2} * 0,9511 * 0,3090 * 0,39 + \frac{1}{2} * 0,3090 * 0,4848 * 0,22 \\ &= 1,9989 \text{ square units} \end{aligned}$$

$$\begin{aligned} S_5 &= \frac{1}{2} * 0,4848 * 0,9925 * 0,392 + \frac{1}{2} * 0,9925 * 0,9511 * 1,971 + \frac{1}{2} * 0,9511 * 0,9511 \\ &\quad * 2,01 + \frac{1}{2} * 0,9511 * 0,3090 * 0,72 + \frac{1}{2} * 0,3090 * 0,4848 * 0,19 \\ &= 2.0537 \text{ square units} \end{aligned}$$

$$\begin{aligned} S_6 &= \frac{1}{2} * 0,4848 * 0,9925 * 0,208 + \frac{1}{2} * 0,9925 * 0,9511 * 2,025 + \frac{1}{2} * 0,9511 * 0,9511 \\ &\quad * 2,34 + \frac{1}{2} * 0,9511 * 0,3090 * 0,36 + \frac{1}{2} * 0,3090 * 0,4848 * 0,41 \\ &= 2.1478 \text{ square units} \end{aligned}$$

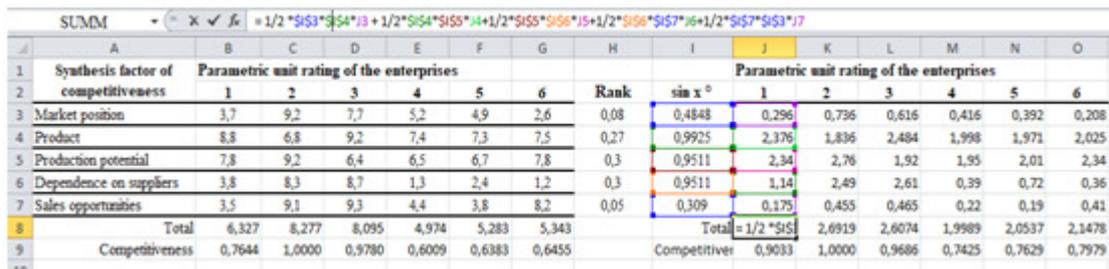
To calculate the coefficients of competitiveness for all enterprises and determine a market strategy for them (Table 3) we use the same methodology as in analytical method.

**Table 3** Parametric rating of enterprises by the area of polygons

Enterprise	Competitiveness	Strategy
2	$2.6919 = 1,0000$	Leader
3	$2.6074 / 2.6919 = 0,9780$	Market follower
1	$2.4316 / 2.6919 = 0,9033$	
6	$2.1478 / 2.6919 = 0,6455$	Market challenger
5	$2.0537 / 2.6919 = 0,6383$	
4	$1.9989 / 2.6919 = 0,6009$	

### 3.3. Automation of calculations

As was seen in the process, finding competitiveness and defining an enterprise strategy requires quite large calculations. In our example, we took 6 enterprises, however, according to official statistics in Ukraine, more than 100 manufacturers of dairy and milk-containing products, which indicates the need to automate calculations. As you can see, the calculations are not as complicated as they are voluminous, respectively, Excel, which is installed on most computers, will cope with this task. Moreover, you can work with two methods on one sheet of the program, it will allow you to visually compare the results (Fig. 8).



**Figure 8** Example of automating calculations using Excel

## 4. CONCLUSION

The competitive status of an enterprise directly depends on its competitive advantages, which to a large extent depend on the efficiency of the use of different types of resources in the process of production, marketing and subsequent customer service.

Each company has a large variety of properties (characteristics). To evaluate them, it is necessary to reduce them into homogeneous groups, determine quantitative and qualitative indicators and methods of their measurement. It is impossible to take into account all the characteristics of the enterprise, so you should choose the most important groups and the most important properties in the group. Therefore, the assessment of the competitiveness of the company depends on the objectives of the analysis; the practical possibility of obtaining the necessary information; used methodology for measuring indicators.

The main difference between the methods described above from others is that the number of factors of competitiveness of an enterprise to be applied when using this technique is unlimited. This is one of the main advantages of these methods for assessing competitiveness. They allow you to assess the competitiveness of the product, enterprise, industry, economy.

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