

METHODOLOGICAL INSTRUMENTS OF POLYFUNCTIONAL COMPETITIVENESS EVALUATION (ON THE EXAMPLE OF AGRICULTURE)

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Annotation

Within the condition of agricultural markets globalization it is needed to define the priority branches of agriculture. This will allow native manufacturers to maximum adapt to competitive conditions of environment and to create global products. It is proved empirically that Ukraine is integrated into global world market and already at this very stage its offer as for global agricultural and production products is made of eight goods positions. It is proved that one of the global products the request for which is not satisfied in full at the world markets is the beekeeping products. From the position of holistic paradigm and under the context of agriculture multifunctional development concept, the presence of optimal set of competitive advantages distinctive for beekeeping products is proved; on the basis on this the category “polyfunctional competitiveness” was offered and was mathematically grounded.

Within the conditions of the agriculture and production markets globalization there is a need to define the list of strategic branches of agriculture and to fulfill the deep diagnostics of their state and corresponding segments of the market with the aim of maximum adaptation to competitive environmental conditions and creating global products. Author generalization of investigations in this field let to offer the definition which is adequate to modern studies and approaches. We offer to understanding of the global agricultural and production product as a maximum adapted to the consumers' global needs unified and standardized product of agricultural origin at a defined market segment taking into account manufacturer's country specifics. We fully share O. Shvydanenko's thought who indicates that the status of country and other functional subjects on a global market depends on their competitiveness which is characterized by the shares in global request and global offer (Швиданенко О.А., 2007).

Ukraine is integrated into global world market and at this very stage its offer as for global agricultural and production products consists of eight goods items, however the raw material origin ones are prevailing according to statistics FAOSTAT data (FAOSTAT, 2009). Such products are sunflower, honey, barley, potato, beetroot, eggs, wheat and soybean.

Within the context of agricultural and production markets globalization and the need of manufacturing global agricultural and production products real as well as potential branches of agriculture deserve special attention, beekeeping is one of such branches. Ukraine is in the four biggest honey manufacturers under the volume of gross manufacturing and level of the product consuming. During the last decade the product has been marked by the world highest rewards for quality and taste characteristics. World niches at the corresponding segment of agricultural and production market are not occupied, at the same time the world request for corresponding products keeps on growing. Beekeeping branch is able to indirectly provide domestic food security, to assist development of the adjacent branches of agriculture and keeping the national agricultural ecological systems, to positively influence the nation health state, to assist overcoming village poverty, to provide corresponding incomes to state and local budgets by developing agricultural business and payment of corresponding taxes, to have at sufficient extent the export potential, to be requested at international markets and assist developing the agricultural business at the branch and agricultural sector in total. From the position of holistic paradigm and under the context of agriculture multifunctional development concept the logics is in the conclusion that the beekeeping branch product has optimal set of competitive advantages, i.e. we can talk about its *polyfunctional competitiveness*. We offer to include into scientific circulation the noted category as it does not contradict the theory of agriculture multifunction and is not limited by only society welfares, its multi aspect and multi versatility is displayed in economical and social and ecological and resource contexts. The need of supplement the categorical apparatus is conditioned by regularity of the method of operating the notions and reflecting the noted characteristics in branch and product aspects with the aim to define this phenomenon in agrarian aspect. On the basis of method of terminological analysis and method of operating the notions it is offered to understand the concentrated expression of

organization-and-economical, institutional-and-economical, institutional-and-management, social-and-professional, natural-and-ecological reserves and abilities of specific agricultural product which are implemented in subjects of ownership commodity relations at agricultural and production market upon this implementing the positive effect for environment and development of rural territories as a polyfunctional competitiveness. Using other words this is a set of characteristics which are on one hand are independent on each other but on the other hand its presence and set create positive synergic four-in-one effect in social-and-politic as well as ecological-and-economical dimensions.

The main methodological tasks of solving the issue of increasing the competitiveness of objects and subjects including polyfunctional are the following:

- 1) Definition of the competitive advantages from positions of sector approach, determination of peculiarities of their forming and implementation;
- 2) Definition of the criteria of polyfunctional competitiveness and creating measurement indexes system;
- 3) Development of method instruments of evaluation the polyfunctional competitiveness;
- 4) Development of methods of creating the algorithms for increasing the competitiveness;
- 5) Back grounding the strategic and tactical direction of implementing the competitive advantages.

Polyfunctional competitiveness is provided by the defined quantity of components which are in their turn are characterized by *the set of competitive advantages of primary and secondary origin*. Primary competitive advantages are provided for the sake of objective factors such as natural potential, geographic location of the country manufacturer and its climatic zone, aboriginal layers and kinds of fauna and flora, etc. The secondary competitive advantages are created by the subjective factors such as personnel qualification, competence and skills, technical and technological equipment and level of informing the production processes, level of using the NDDCR and innovation of product/service, energy and resource capacity of production process, infrastructure supply, organizational form of management, using the marketing instruments, etc. (table 1).

Each criteria item of reserves and abilities, organizational-and-economical, institutional-and-management, social-and-professional, natural-and-ecological consists of a set of independent variable components. Competitive goods items are described by the whole set of indexes. The index of polyfunctional competitiveness can be presented as a function of four variables, each of which is the index of competitiveness at a certain indication. The polyfunctional competitiveness can be mathematically presented as:

$$PC = f(K_E, K_I, K_S, K_N),$$

where

- PC – Index of polyfunctional competitiveness (the polyfunctional competitiveness);
- E – The organizational and economic reserves and capacities;
- K_E – Index of competitiveness at the indication of this criterion (organizational-and-economical reserves and capacities)
- I – Institutional-and-management reserves and capacities;
- K_I – Index of competitiveness at the indication of this criterion (institutional-and-management reserves and capacities)
- S – Social-and-professional reserves and capacities;
- K_S – Index of competitiveness at the indication of this criterion (social-and-professional reserves and capacities)
- N – Natural-and-environmental reserves and capacities;
- K_N – Index of competitiveness at the indication of this criterion (natural-and-ecological reserves and capacities)

Sources of creation the advantages as a basis for polyfunctional competitiveness

Criteria	Advantage genesis (indexes system)	Advantage factor essence	
Reserves and capacities	Organizational-and-economical	Low expenses / price	Setting up lower prices and receiving higher profits by manufacturers; expenses economy by consumers
		Goods differentiation	Uniqueness of the goods which provides its highest consuming value
		Production capitalization	More productive in comparison with competitive conversion of profit into added capital, access to financial capital
		Effective managements	Competence, effectiveness in managing and running; advantages of organizational form of farming; flexibility of production upon the change in environmental conditions; commercial art
		Speed of reaction	Immediate and rapid reaction to market needs (time factor)
		Imitation possibility	Imitation reserve as for strategy of creating competitive advantages, methods of competitiveness and production of goods analogues or substitutes.
		Market share	Attaching the buyer or monopolization the marker share, economy at the production scale
		Technological advantages	Ability to innovations in production processes; ability to innovation in products (apitherapy); level of technological equipment quality; high refunding
		Modern informational systems	Possibility to control the production processes; competence in business management; possibility to react in-time for market conditions which are constantly transforming
		Marketing concept	Powerful network of realization channels, distributors/dealers; own trading network; quality service; peculiarities of sales methods; complete satisfaction of the purchase request; enough range of width and depth of product assortment; attractive design and packing.
	Institutional-and-management	State support	Political will; optimal combination of market and state regulation; grant and subvention system; business parity collaboration and co-operation of business and state institutions; social advertisement.
		Image and reputation	Positive and favorable country of origin image and reputation; manufacturer's; goods'.
	Social-and-professional	Workers' qualification	Competence and adequateness in all spheres of manufacturing, processing, promoting and realization, including the scientific researches; high labor productivity (especially at requiring the expenditure of much labor productions), effect of experience accumulation.
		Consuming culture	Forming the request according to traditional culture and consuming norms
	Natural-and-ecological	Goods quality and safety	Products certification; quality and safety control at all stages of manufacturing, storing, transporting and products sales.
		Geographical origin	Natural-and climatic conditions and territorial peculiarities of product origin.
		Environmental protection measures	Positioning by the subject of business the environment protection arrangements via manufacturing of own products.
		Resource background	Accessibility of resources and possibility of their combination.

Source: own research

Main features of each criterion (E, I, S, N) are described in table 1. Each index of competitiveness K_E, K_I, K_S, K_N is a function from the feature of its criterion, i.e.

$$K_E = f_E (f_E^1, f_E^2, f_E^3, \dots, f_E^n), \quad f_E^i (i = \overline{1, n}),$$

where

$f_E^i (i = \overline{1, n})$ – Components of criteria feature E ;
 n – Quantity of components of criteria feature.

The research differentiates:

f_E^1 – Price
 f_E^2 – Differentiation of goods
 f_E^3 – Productive capitalization
 f_E^4 – Effective management
 f_E^5 – Speed of reaction
 f_E^6 – Imitation possibility
 f_E^7 – Market share
 f_E^8 – Technological advantages
 f_E^9 – Informational systems
 f_E^{10} – Marketing concept

The research of competitiveness under above mentioned advantages is not obligatory grounded by all ten components. With the aim of definition the competitiveness under the noted indexes it is convenient to present the changes of competitiveness in a form of differential:

$$K'_E = \sum_{i=1}^n \left(\frac{dK_E}{df_E^1} df_E^1 + \frac{dK_E}{df_E^2} df_E^2 + \frac{dK_E}{df_E^3} df_E^3 + \dots + \frac{dK_E}{df_E^{10}} df_E^{10} \right).$$

Or shorter:

$$K'_E = \sum_{i=1}^n K_E^1 + K_E^2 + \dots + K_E^n,$$

where K_E^i – competitiveness of the product dependent on $f_E^i (i = \overline{1, n})$.

The components of the competitiveness calculation are defined by known methods or, for example by presenting the integral index of competitiveness (Стратегическое управление, 2001).

The functions are put down by analogue method:

$$K_I = f_I (f_I^1, f_I^2),$$

where

f_I^1 – State support
 f_I^2 – Image and reputation

$$K'_I = \frac{dK_I}{df_I^1} df_I^1 + \frac{dK_I}{df_I^2} df_I^2,$$

or

$$K'_I = K_I^1 + K_I^2,$$

where K_I^i – product competitiveness which is dependent on $f_I^i (i = 1, 2)$.

Further,

$$K_S = f_S (f_S^1, f_S^2),$$

where

f_S^1 – Personnel qualification
 f_S^2 – Consuming culture

$$K'_S = \frac{dK_S}{df_S^1} df_S^1 + \frac{dK_S}{df_S^2} df_S^2,$$

or

$$K'_S = K_S^1 + K_S^2,$$

The next component of criteria feature, natural-and-ecological reserves and capacities is defined by analogue method:

$$K_N = f_N (f_N^1, f_N^2, f_N^3, f_N^4),$$

where

- f_E^1 Product quality and safety
- f_E^2 Geographical origin
- f_E^3 Environmental protection measures
- f_E^4 Resource supply

$$K'_{NI} = \frac{dK_N}{df_N^1} df_N^1 + \frac{dK_N}{df_N^2} df_N^2 + \frac{dK_N}{df_N^3} df_N^3 + \frac{dK_N}{df_N^4} df_N^4,$$

or
$$K'_N = K_N^1 + K_N^2 + K_N^3 + K_N^4,$$

where K_N^i – product competitiveness which is dependent on $f_N^i (i = 1, 2, 3, 4)$.

The research of polyfunctional competitiveness is fulfilled in four directions. At each stage by analyzing the competitiveness for example by N factors, others are taken as unchanged. It is complicated to write the model of polyfunctional competitiveness which counts all criteria features; it all depends on the exact features the research is being done with. I.e. for example if the index of competitiveness is presented in the view of function:

$$PC = f (Q, P, M, S),$$

where

- Q** – Index of product quality for a certain period of time
- P** – Product price for a certain period of time
- M** – Index which characterizes the effectiveness of marketing strategy in relation to goods promotion;
- S** – Cost of the service maintenance of manufacturing equipment.

Model of competitiveness dimension definition will be of the following view (Гайнанов Д.А., Гузаирова Г.Р., 2010).

$$PC = \sum_{i=1}^n \beta_{1i} \frac{Q_i^2}{2} - \sum_{i=1}^n \beta_{2i} \ln P_i + \sum_{i=1}^n \beta_{3i} \frac{M_i^2}{2} - \sum_{i=1}^n \beta_{4i} \ln S_i$$

So, the model of polyfunctional competitiveness can be presented as a complex function:

$$PC = f (K_E, K_I, K_S, K_N),$$

Or
$$PC = K_E, K_I, K_S, K_N.$$

Thus the methodical instrument of polyfunctional competitiveness evaluation can be presented as a compound function from four variable criteria reserves and capacities, organization-and-economical, institutional-and-management, social-and-professional, natural-and-ecological each of which consists of set of independent components which can be researched together as well as separately. The increase of competitiveness is possible under condition of forming and realization of more competitive advantages and primary and secondary origin.

Literature

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