Competitiveness of health care institutions of the Republic of Kazakhstan: theory, evaluation technique, development mechanism

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Abstract: The research paper deals with the concept of competitiveness. General evaluation techniques of competitiveness of health care institutions are studied. The analysis of some indexes of competitiveness of health care institutions in the regions of Kazakhstan is carried out. Integral index to evaluate competitiveness of health care institutions is formed and priority measures to improve the competitiveness of health care institution are singled out.
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1. Introduction

Today, one of the factors of the effectiveness of health care system is the competitiveness of medical institutions. Problems of its evaluation are related to its priority of the quality of provided medical services, determined by many factors, including: skill level of medical personnel, maintenance supply, developed infrastructure.

2. Material and Methods

Competitiveness issues were studied by such classics of marketing science as I. Ansoff [1], Ph. Kotler [6], M. Porter [9], C.K. Prahalad [5], and medical industry competitiveness issues were covered in the papers of such scholars as M.V. Artyuhin [2], A.J. Ovsyanetsky [8], T.A. Siburina [11]. However, the mechanism to evaluate the competitiveness of health care has not been covered yet in full.

Accordingly, the objectives of this paper are to analyze the methods of evaluating the competitiveness of medical institutions and to find out the directions of its development.

Competitiveness of health care institution is defined as an advantage over other institutions, which is formed on the basis of complex internal and external factors, opens up new possibilities for the development and market penetration.

The competitiveness of health care institution in a broad sense is an advantage over other institutions in the industry, ensured by favorable financial performance, resource efficiency, effective management system, positive goodwill, which helps to gain under influence of many factors of internal and external environment as well as economic, financial, social and other factors. The competitiveness of health care institution in narrow sense is a set of financial, economic, resource, commercial and technological characteristics forming its competitive potential. Competitiveness evaluation methodology is based on a significant number of evaluation methods that can be grouped by forms, results and according to integratedness of evaluation results (Table 1).

All existing evaluation methods have their advantages and disadvantages. In this case, auxiliary methods of competitiveness analysis are the following: SWOT analysis, PEST analysis, SLEPT analysis, PESTLE analysis, STEEPLE analysis [6]. In our opinion, the most reasonable for the evaluation of competitiveness of health care institution is the evaluation by means of integral index by the following groups of factors:

Group I: Evaluation of resource and infrastructure capacity of health care institution: long term assets and accumulated depreciation (of medical and diagnostic equipment), condition of service rooms, bed complement per 1 patient, availability of consumables and medication per 1 patient.

Group II: Evaluation of staffing: staffing of doctors and young skilled professionals with medical education per one health care institution, availability of pharmaceutics and paramedical personnel per 1 patient.

Table 1 – Methods for Evaluation the Competitiveness of an Institution*

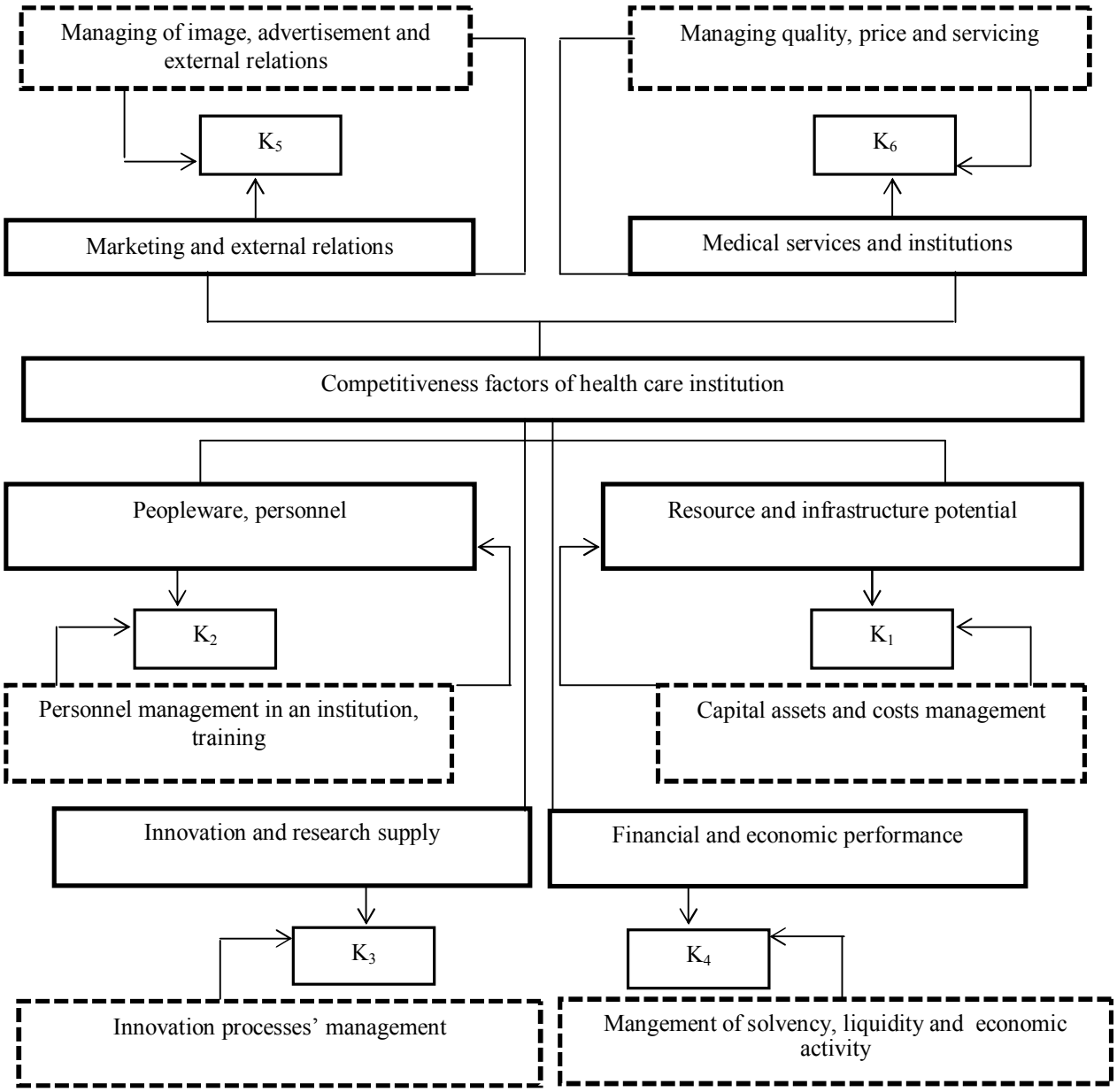
№	Groups of methods	Name
According to the form of competitiveness evaluation		
1	Non-formalized methods	Method of expert interviews, method of scenarios, methods of analysis of financial statements, morphological analysis
2	Formalized methods	Mathematics and statistical methods for studying ties, method of financial calculations, methods of decision theory
According to printing of the evaluation results		
3	Matrix methods	Matrix of Hamel Prahalad, ADL model, матрица Boston Consulting Group matrix, I. Ansoff matrix, McKinsey matrix, Shell matrix, matrix of Porter's competitive strategies
4	Methods of indexes application	Method based on the definition of production competitiveness. Method based on the theory of effective competition. Method based on the determination of force of the reactive position. Benchmarking method
5	Methods of application of competitiveness indicators	Indicators of market share, marketing appeal, market monopolization (HHI – Herfindahl–Hirschman Index), Rosenbluth Index (Ir) and others
6	Graphical methods of evaluation	Competitiveness polygon Competitiveness radar
According to integratedness of evaluation results		
7	Unit	Evaluation by means of metrics
8	Integral	Evaluation by means of integral index

* - Developed and summarized by the author based on [1, 3, 4, 5, 6, 7, 9, 10]

Group III: Assessment of innovation and research provision of health care institution: investment dollars in innovation of an institution, introduction of innovative processes in the medical practice (technological - methods, prophylaxis techniques, diagnosis and treatment on the basis of available medicine (equipment); organizational innovation, economic innovation, information and technological innovation [11, 12, 13, 14]), availability of patents and licenses for treatment practices, intangible value of an institution. Group IV: Evaluation of financial and economic support of health care institution: amount of financing of health care institution from the budget, amount of paid medical services, costs of maintaining the hospital, liquidity and solvency of an institution.

Group V: Evaluation of marketing and external relations: the cost of marketing effort of an institution, external relations of an institution with other medical and research institutions, including international ones (exchange of experience, training, employment of technologies).

Group VI: Assessment of medical services: the cost of rendered medical services, prime cost of medical services and demand for a medical service. Based on the given factors in absolute measurement, the intermediate indicators of competitiveness are scored: resource and infrastructure competitiveness (K_1), personnel competitiveness (K_2), innovation competitiveness (K_3), financial and economic competitiveness (K_4), marketing and business competitiveness (K_5) competitiveness of medical services of health care institution (K_6) (Fig. 1).



* - Developed by the author

Fig. 1 – Complex of Factors of Health Care Institution Competitiveness and Ways to Improve Them

3. Results

It is reasonable to study competitiveness of health care institutions in the context of individual groups of institutions: outpatient clinics, day hospital institutions, patient care institutions, dispensaries, as well as the territories of their location - cities, villages, provinces, regions and the whole country.

The following criteria can be applied as basic ones for evaluation of competitiveness level of health care institution [10, 13]: global, national or industry standards for the specified factors (indicators); comparison with other (leading) institutions within the region, state, at an international level; critical levels of indicators when the institution becomes uncompetitive by following equation (1):

$$Ki = Kri / Kbi \quad max \qquad (1)$$

Kri – score of actual indicators of the institution competitiveness; Kbi - score of basic indicators of competitiveness.

We letter K as an integral index of competitiveness of health care institution. Due to the fact that each index of competitiveness (K_1, K_2, K_3, K_4, K_5, K_6) has a different degree of importance for the calculation of the average figure of competitiveness of health care institution, criteria significance coefficients should be determined by

means of expert method.

Integral index of competitiveness of health care institution (K) is determined on the basis of the weighted averages of competitiveness groups and its function will be of the following form (2):

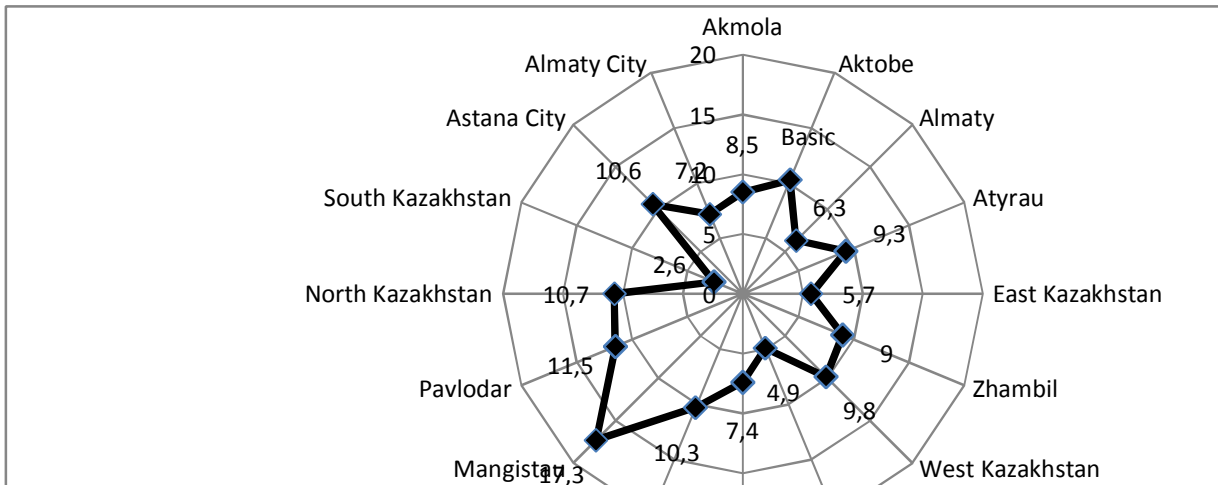
$$K = i \Sigma w \Sigma \quad Ki \qquad (2)$$

where wi - unit weight of the indicator ($\sum wi = 1$); Ki – intermediate indicators of competitiveness of factors of groups 1-6 ($K_1, K_2, K_3, K_4, K_5, K_6$).

Accordingly, an average figure should be determined by the following formula (3):

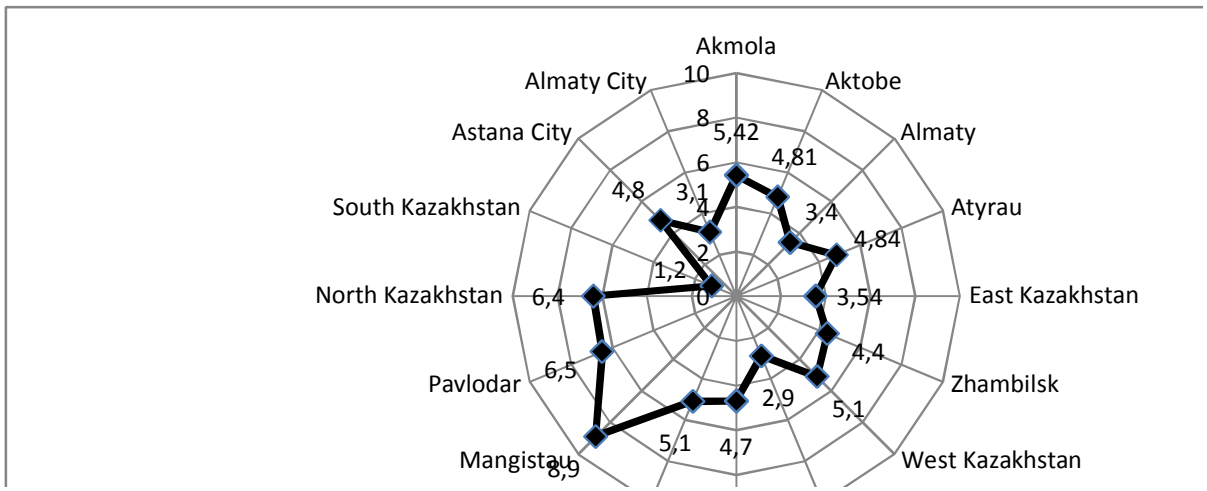
$$K = i \Sigma w \Sigma \quad Ki = w_1 * K_1 + w_2 * K_2 + w_3 * K_3 + w_4 * K_4 + w_5 * K_5 + w_6 * K_6 \qquad (3)$$

In the issue, we get an average figure of competitiveness of health care institution according to the suggested methodology. Then we study separate indicators of competitiveness components of an average figure of competitiveness of health care institutions by the regions of Kazakhstan: ratio of sickness rate to bed complement (the indicator within the scope of resource and infrastructure competitiveness (K_1)) (Fig. 2), and the ration of sickness rate of the population to medical staff level (the indicator within the scope of personnel competitiveness) (K_2)) (Fig. 3).



* - Developed and summarized by the author based on (8)

Fig. 2 – Ratio of Sickness Rate of the Population to Bed Complement by Regions *



* - Developed and summarized by the author based on (8)

Fig. 3 - Ratio of Sickness Rate of the Population to Medical Staff Level in Health Care Institutions by Regions *

The ratio of sickness rate to bed complement by regions shows that the largest bed complement is in health care institutions of Mangistau, Pavlodar, North Kazakhstan regions and Astana City. And medical staff level is the highest in the following regions: Mangistau, Akmola, Atyrau, Kostanai regions and Astana.

4. Discussions

In our opinion, the most important among the entire list of factors of integral index of competitiveness of health care institutions (K) are the following ones: cost of medical equipment and ageing of equipment, introduction of innovation, provision of patients with skilled medical personnel, amount of financing for health care institution from the budget, quality and price of medical services. Accordingly, the main priority measures to raise competitive capacity of health care institutions are defined as follows: increasing the financial independence of the medical institutions, requiring an increase in funding; balancing the system of financing of institutions by priority of funding of emergency and first aid; improving staffing by skilled medical personnel; improving the system of practical training of future doctors; modernizing the apparatus and equipment; broadening international cooperation of health care institution.

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Thus, the evaluation of competitiveness of health care institution should be based on an integrated indicator of competitiveness, which is determined by the components of the resource and infrastructure, human resources, innovation, financial and economic, marketing, and business competitiveness and competitiveness of medical services of health care institution. Promising areas for further research in this field are groundwork of mechanisms to increase the components of competitiveness of health care institutions.

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