

**CARACTERÍSTICAS DA COMPETITIVIDADE DOS PRODUTOS DO  
EMPREENDEDORISMO INDUSTRIAL****COMPETITIVE PECULIARITIES OF INDUSTRIAL ENTERPRISES' PRODUCTS****ОСОБЕННОСТИ КОНКУРЕНТОСПОСОБНОСТИ ПРОДУКЦИИ ПРОМЫШЛЕННЫХ  
ПРЕДПРИЯТИЙ**

UKUBASSOVA, Galiya S.<sup>1\*</sup>; AMIRBEKOVA, Ainur B.<sup>2</sup>; PRIMZHAROVA, Kalyash K.<sup>3</sup>;  
DARIBAYEVA, Adaskhan K.<sup>4</sup>; ISMAILOVA, Diana T.<sup>5</sup>

<sup>1,2</sup> Kazakh University of Economics, Finance and International Trade, Department of Economics, Nur-Sultan – Republic of Kazakhstan

<sup>3</sup> Narxoz University, Department of Public Administration, Almaty – Republic of Kazakhstan

<sup>4</sup> Kazakh University of Economics, Finance and International Trade, Department of International Trade and Law, Nur-Sultan – Republic of Kazakhstan

<sup>5</sup> Kazak University of Technology and Business, Department of Management and Tourism, Nur-Sultan – Republic of Kazakhstan

\* Correspondence author  
e-mail: ukubasova\_g@mail.ru

Received 29 August 2019; received in revised form 20 October 2019; accepted 25 October 2019

**RESUMO**

As empresas aumentam seus indicadores financeiros para atingir suas metas de desenvolvimento. A fonte de desenvolvimento pode servir como uma estratégia desenvolvida e como uma versão especializada do programa, que se baseia na consecução de certos indicadores financeiros. Particularmente, pode ser a questão da constante garantia de lucro e do aumento e otimização de processos internos que são considerados como base do funcionamento constante da empresa. A consideração do que pode ser visto como a competitividade da produção determina a relevância do estudo. A inovação do estudo está no fato de que não apenas uma certa estratégia para atingir as metas é considerada a base da competitividade, mas também uma estratégia para a formação do ambiente interno sustentável da empresa, que pode ser implementado considerando as necessidades de produção e seu potencial desenvolvimento. Como base para aumentar a competitividade da indústria química e a operação sustentável da empresa, os autores consideram o ambiente interno. Prevê-se que a implementação do aumento da resistência interna seja realizada com base na avaliação do sistema de cooperação externa. O significado prático do trabalho é determinado pela necessidade de formar uma certa relação entre estabilidade interna e as possibilidades de mudança externa.

**Palavras-chave:** *indústria química, produtos, competitividade, empresa, desenvolvimento econômico.*

**ABSTRACT**

Industrial enterprises are improving their financial performance to achieve their development goals. The source of development can serve as a developed strategy and a specialized version of the program, which is based on the achievement of certain financial indicators. Particularly, it can be the issue of constant ensuring of profit, and of the increase and optimization of internal processes which are considered as a basis of steady functioning of the enterprise. Consideration of what can be viewed as the competitiveness of production, namely determines the relevance of the study. The novelty of the study is in the fact that not only a certain strategy in achieving the targets is considered as the basis of competitiveness, but also a strategy for the formation of internal sustainable environment of the enterprise, which can be implemented considering the needs of production and its potential development. As a basis for increasing the competitiveness of the chemical industry and sustainable operation of the enterprise, the authors consider the internal environment. The implementation of the increase in internal resistance is expected to be conducted based on the evaluation of the system of external cooperation. The practical significance of the work is determined by the need to form a certain relationship between internal stability and the possibilities of external change.

**Keywords:** *chemical industry, products, competitiveness, enterprise, economic development.*

## АННОТАЦИЯ

Промышленные предприятия повышают свои финансовые показатели для достижения поставленных целей развития. Источником развития может служить как разработанная стратегия, так и специализированная версия программы, которая основывается на достижении определенных финансовых показателей. В частности, речь может идти как о постоянном обеспечении прибыли, так и о повышении и оптимизации внутренних процессов, которые считаются основой устойчивого функционирования предприятия. Рассмотрение того, что можно считать конкурентоспособностью производства и определяет актуальность проводимого исследования. Новизна исследования определяется тем, что в качестве основы конкурентоспособности рассматривается не только определенная стратегия в достижении плановых показателей, но также и стратегии формирования внутренней устойчивой среды предприятия, которая может быть реализована с учетом потребностей производства и его потенциального развития. В качестве основы для повышения конкурентоспособности предприятия химической промышленности авторы рассматривают внутреннюю среду как основу для обеспечения устойчивого функционирования предприятия. Реализацию повышения внутренней устойчивости предполагается проводить на основе оценки системы внешнего сотрудничества. Практическая значимость работы определяется необходимостью формирования определенного соотношения между внутренней устойчивостью и возможностями внешнего изменения.

**Ключевые слова:** *химическая промышленность, продукция, конкурентоспособность, предприятие, экономическое развитие.*

## 1. INTRODUCTION

For the enterprises operating in imperfect competition markets, the ability to foresee the situation and to create and consolidate their competitive advantages is of particular importance. Many studies on competitiveness are conditioned by different positions of scientists, and the lack of a unified approach to the definition of the object of study. There is no systematic approach to the definition of competitiveness: its various elements are considered separately from each other, the relationship between them is not fully considered (Mingaleva *et al.*, 2020). A gross methodological error is the use of a methodology based on an endogenous view of the market system, according to which the main problem of existing market participants is the preservation of the enterprise as a market entity, and the means of its solution is the rationalization of market behavior on the basis of an effective competition strategy (Ivashchuk, 2013; Negrych, 2013; Pylypenko and Murtazina, 2013). When using the system-praxeological approach, such an understanding of competitiveness as an integrated property of the economic system is realized, which determines the implementation of the goals and the results of functioning necessary and sufficient for the active positioning of the system in the market space (Atanelishvili and Silagadze, 2018; Sharafutdinov *et al.*, 2018; Akhmetshin *et al.*, 2018a; Akhmetshin *et al.*,

2018b).

The current state of the chemical industry market is characterized by constant changes in the external environment and environmental requirements (Gribust, 2018), the variability of consumer demand, the presence of many enterprises of different forms of ownership, providing almost every economic entity with the right to enter the external market, increasing uncertainty, and risk (Zhang and Niu, 2013). In the context of the formation of market relations, the main factor in the success of modern enterprises is to ensure their competitiveness both now and in the future.

In the conditions of increasing dynamism and uncertainty of the external environment, strategic management is effective for solving these problems (Rusinova, 2014). Strategic management is a multifaceted, formal and behavioral management process, through which effective strategies are formulated and implemented, which help to balance the potential of the enterprise with the capabilities of the external environment to achieve the goal. The stages of strategic management, which is a kind of decision-making process, include as follows (Chursin and Makarov, 2015a): awareness of the need to make a decision; diagnosis and restructuring of the problem; formulation of options for further action; adoption of one or more options for implementation; implementation of decisions; monitoring and evaluation of results.

The approach to strategic management is based on strategic analysis, which performs the following tasks (Xin, 2013):

- collection and processing of information for management decision-making on strategic issues;

- analysis of existing strategies and assessment of their dynamism and ability to adapt to changes in the external environment;

- assessment of prospects and competitive opportunities of the enterprise;

- analysis of strategic alternatives for decision-making on investment and financing of production development, marketing, and sales organization and other issues;

- operational analysis of the implementation of strategies and their adjustment; providing top management with reliable, relevant strategic information.

Such an approach is formed by their requirements, which are fully implemented within one or more enterprises based on several positions that are fully justified economically for a particular enterprise (Silagadze, 2019).

## 2. LITERATURE REVIEW

The need to determine the key factors affecting the competitiveness of the enterprise, in particular, its components, determines the relevance of this issue and is discussed in this section. By the factors, we understand the conditions, causes, parameters, indicators that affect the economic process, and the result of this process. The factors are dynamic in time and space and interact closely (Čočkalo *et al.*, 2019).

The study of the influence of the external and internal environment is reflected in the works of many scientists: mostly of Western school. Factor analysis of competitiveness and the study of the mechanism of its geno- and phenotypic characteristics formation allow us to assert the general equilibrium of the effects of the internal and external environment on the level of economic systems' competitiveness (Kruzhilin *et al.*, 2018). However, this equilibrium theoretically exists only in the long term as a general trend. In the short term, non-equilibrium models with internal or external competitiveness phenotype are real.

Economic-logical, economic-mathematical, and heuristic methods of analysis are used in the analysis of individual components of the external

and internal environment. One of the most popular methods of analysis and assessment of the environment is SWOT-analysis, which involves the search for opportunities and threats contained in the external environment of the enterprise; study of the strengths and weaknesses of the enterprise; and the determination of chain links between these two groups of factors (Tao and Li, 2018).

The study on the identification and evaluation of certain factors affecting the company is the subject of many works. The purpose of analyzing these works was to identify and distribute the factors of competitiveness of the enterprise (Beausang, 2003). There are more than 40 factors of the internal environment, which were determined as a result of the study of their impact on the competitiveness and competitive sustainability of the enterprise. The factors to be considered when choosing each competitive strategy (low-cost strategy, differentiation strategy, and focus) include as follows: production, financial, marketing, technological, innovative, labor, information, management, time, and spatial (Shtal *et al.*, 2018a).

One of the important factors affecting the preservation of competitiveness in the future, that is, the competitiveness of the enterprise, is its innovative activity. Modern competition has some features – enterprises compete not so much for the possession of capital resources and material values, but for the ability to develop and implement innovations. Scientific and technological progress requires enterprises to use advanced technologies and equipment. The progressive scientific knowledge embodied in them allows enterprises not only to adapt to the existing external conditions but also to actively influence them. Also, innovative development of the enterprise leads to new qualitative changes not only in the production sphere, but also in scientific and technical, organizational, and managerial one.

However, it should be noted that the key aspect of innovation is the issue of financing. Innovation requires significant financial resources, and therefore for effective innovation it is advisable to create conditions for the gradual accumulation of domestic and foreign resources.

In the framework of the approach, which investigated the static and dynamic financial characteristics of the enterprise, it is noted that the current, short-term financial characteristics reflect the financial condition of the enterprise, and the financial stability of the entity – a dynamic

characteristic that reflects the stability of the financial condition of the enterprise in the long term (Li *et al.*, 2018). To assess the static availability of financial resources, the liquidity indicators and capital structure are used, for which a normative value is set. The main source for the calculation of indicators is the balance sheet of the enterprise, compiled on a certain date (Liu and Zhu, 2017). To assess the dynamic availability of financial resources, profitability and turnover indicators are calculated, the source of information on which is the balance sheet of the enterprise and the profit and loss statement, which can be published in the public press (Chursin and Makarov, 2015b). The indicators for assessing financial stability do not have regulatory (threshold) values, so for comparison, as a rule, the industry average value or data of leading competitors are used (Nesterenko *et al.*, 2019). In the set of indicators describing financial stability, it is necessary to additionally include the indicators characterizing the cash flow, its structure and dynamics. The source for the calculation of the data is the statement of the cash flows of the enterprise, which is included in the annual reporting of the economic entity (Conti and Giaccaria, 2001).

An important factor affecting the competitiveness of the enterprise is its personnel (Lawton and Hodges, 1999). Human resources – the most active factor that enables the company to adapt and develop, so it is important not only the available number and qualification of personnel, but also to analyze future needs in personnel; the presence and successful implementation of personnel-strategy – recruitment, selection, appointment, promotion, release, consolidation, retraining, personnel evaluation, training and development of personnel, as well as an effective system of motivation and remuneration system. The corporate culture of the enterprise plays an important role (An *et al.*, 2019).

According to the system approach, the stability of the system primarily depends on the stability of its individual elements, representing the structure of the system, and the quality of the system management. The quality of management depends on the management structure, management processes, management methodology (Gilroy, 1998). By the management structure, we mean the functional and organizational structure, the system of organizational relations, the interaction between the supreme governing bodies, norms, standards, etc. By the processes of management, we mean

the system planning, communication, development processes, and execution management solutions, and process management. That is, organizational and technological, socio-organizational and information processes. By the methodology of management, we mean the vision, objectives, strategies, policies, methods, functions, that is, the organizational and methodological processes, theoretical and methodological processes (Shtal *et al.*, 2018b).

The effectiveness of management depends on the application of scientific methods in the systematic approach to it (Chursin and Makarov, 2015c). Such methods include as follows: golden proportion, soft resonance control, cognitive analysis and control, reflexive control, and system approach to management. Assessment of the impact of the environment on the company can be carried out considering the factors proposed above. The approach to defining the factors of influence of environment on the company can be used to develop the indicators of the external environment's impact.

### 3. MATERIALS AND METHODS

In order to function and compete effectively, it is necessary to constantly monitor and respond appropriately, both in terms of commercialization and expansion of services, and in terms of organizational and technical improvement of production. One of the factors that provide high-quality services and maintenance is the use of modern technologies and equipment in the production process.

Technical and technological resource support is the basis for the functioning of the chemical industry. It is the technique and technology that ensure the process of providing the service. The current level of development of the chemical industry makes it possible to offer a particular service in a variety of areas – both in the user segment and in the industrial sector. The level of technology (generation) mainly determines the level of evaluation of the enterprise by consumers. Accordingly, this affects the percentage of the market volume occupied by the chemical industry. And this in its turn – the volume of revenues from activities, and development opportunities.

Based on this, the indicators showing the competitiveness of the chemical industry on the component that determines the stability of the production system are as follows: level of application of advanced technologies to the

technological processes and equipment; area of presence of the chemical industry; share of innovative equipment.

Accordingly, the evaluation of the variable  $X_2$  – sustainability of the production system (Equation 1). Where  $X_{21}$  – the level of application of advanced technological technologies, processes, and equipment;  $X_{22}$  – area of presence of the chemical industry;  $X_{23}$  – share of innovative equipment.

The personnel management system consists of such elements as the planning of the number of personnel, recruitment, and selection of personnel, training and professional development, analysis of work efficiency, and personnel rotation. The planning is carried out to optimize the number and professional level of personnel. For this purpose, we conduct a systematic analysis of the workforce of the enterprise and the forecast of changes in personnel for a certain period, considering the development strategy of the enterprise and personnel policy.

$X_3$  variable estimation – the stability of the personnel (Equation 2). Where  $X_{31}$  – skill level of personnel;  $X_{32}$  – the level of personnel management efficiency;  $X_{33}$  – level of the corporate culture.

Estimation of  $X_{33}$  – the level of corporate culture is carried out according to the following indicators:  $X_{331}$  – the type of organization;  $X_{332}$  – the degree of aggressiveness of the head;  $X_{333}$  – the homogeneity of the culture.

$X_4$  variable estimation – financial and investment performance (Equation 3). Where  $X_{41}$  – return on sales;  $X_{42}$  – return on equity.

For the financial condition, the maximum and minimum levels can be the best and worst recorded in the industry or in the region, or the values of the indicators of the enterprise itself, or the values obtained based on expert assessments. Indicators need to be normalized, and then the value will be from 0 to 1 (Equation 4). Where  $a_{jmin}$  – minimum value of the  $j$  indicator;  $a_{jmax}$  – maximum value of  $j$  indicator;  $a$  – actual value of  $j$  indicator.

The factors influencing the competitiveness of the enterprises also includes the application of modern management techniques. It is also facilitated by a flexible organizational structure and the presence of the mission. An effective system of management of the chemical industry contributes to the continuous satisfaction of the growing needs of consumers, improving

performance by streamlining and optimizing processes, the implementation of such goals as improving the level of customer service, improving competitiveness and efficiency in the future, ensuring profitability, strengthening partnerships and the positive image of the enterprise.

An important factor hindering the further progress of the chemical industry is the imperfection of the organizational and economic management mechanism. The influence of this factor on the competitiveness of the chemical industry is enhanced due to the increased sensitivity of the industry to it. This is due to the specifics of the industry, namely the peculiarities of the organization of the production process, which is not localized within a single enterprise, that is, in creating a service and providing it to the user, several organizationally and financially separate enterprises participate that perform technological operations. Hence the urgent need for a well-organized system of interaction of all participants in the production of chemical products (Yerseitova *et al.*, 2018).

Variable estimation  $X_5$  – management quality (Equation 5). Where  $X_{51}$  – the level of the management structure;  $X_{52}$  – level of application of modern management methods.

Formation and improvement of the management structure is an ongoing process, the purpose of which is to improve the efficiency of the enterprise. A fast-growing chemical industry with a relatively short service life cycle is characterized by a change in the management structure. To analyze the effectiveness of the management structure as one of the factors of competitiveness, it is necessary to investigate the following things: the effectiveness of achieving the goals, objectives, and strategies of the enterprise; the efficient allocation of resources of the enterprise; speed of response to changes; efficiency of interaction between employees and customers; adaptability to internal and external factors and speed of response.

#### 4. RESULTS AND DISCUSSION:

We will assess the competitiveness of Talas Investment Company (Zhambyl Region, Republic of Kazakhstan). The company's activity is the chemical industry. The company is focused on the implementation of the latest achievements in the chemical industry, using fiber-optic communication lines and digital processing in the management of chemical equipment, providing the highest quality products.

Based on the data provided by Talas Investment Company, the level of tactical competitiveness of the enterprise was determined. The calculation considered two factors of competitiveness of services – the quality of services and maintenance, as well as the cost of services. The calculated level of tactical competitiveness of the enterprise is 0.55, which falls within 0.5-0.75 and corresponds to grade C – as average. The composition of indicators for assessing the internal competitiveness of the chemical industry, their gradation (levels) are shown in Table 1.

$X_1$  variable estimation – Sustainability of the marketing system', which was carried out on elements using the scale of the point estimate, is given in Table 2.

The value of the indicator is at two levels – medium and low. We calculate the  $\mu$  value for these levels:

—— 18;

—— 19.

Thus, variable  $X_1$  – Sustainability of the marketing system corresponds to level H – as low.

Variable estimation  $X_2$  – Sustainability of the production system consists of the evaluation of variables:  $X_{21}$  – Level of application of advanced technologies to technological processes and equipment (Table 3),  $X_{22}$  – area of presence,  $X_{23}$  – share of innovative equipment.

Variable estimation of the level of the advanced technologies applied to the technological processes and equipment, which was carried out on the elements using the scale of the score, is given in Table 3.

We calculate the value  $\mu$  for the levels – medium and high, respectively, the parameters of the membership function:

—— 23;

—— 24.

The share of the territory of Zhambyl Region, where Talas Investment Company is present, is 75%. We calculate the value  $\mu$  for the levels – as medium and high, respectively, the parameters of the membership function:

—— 75;

—— 80.

Variable  $X_{22}$  – Area of presence corresponds to level B – as high.

The share of equipment used by Talas Investment Company is 95%. We calculate the value  $\mu$  for the level – as high according to the parameters of the membership function:

100.

Variable  $X_{23}$  – share of innovative equipment corresponds to level B – as high. Variable  $X_2$  – Sustainability of the production system corresponds to level B – as high.

Variable estimation  $X_3$  – sustainability of the personnel consists of the evaluation of variables:  $X_{31}$  – Skill level of personnel (Table 4),  $X_{32}$  – Level of personnel management efficiency (Table 5),  $X_{33}$  – Level of corporate culture (Table 6).

Variable  $X_{31}$  – Skill level of personnel corresponds to level C – as average.

We calculate the value of  $\mu$  for the levels of medium and high, respectively, the parameters of the membership function:

—— 34;

—— 35.

Variable  $X_{32}$  – Level of personnel management efficiency corresponds to level B – as high.

Degree of aggressiveness of the head coincides with the type of organization. The culture is preliminary homogenous.

We calculate the value of  $\mu$  for the levels – intermediate and aggressive according to the parameters of the membership function:

—— 29;

—— 30.

Variables  $X_{331}$  – type of organization,  $X_{332}$  – degree of aggressiveness of the head corresponds to level P – as intermediate. Variable  $X_{333}$  – the homogeneity of the culture corresponds to level O – as homogenous. Variable  $X_{33}$  – Level of corporate culture corresponds to level B – as high. Variable  $X_3$  – sustainability of the personnel corresponds to level B – as high.

$X_4$  variable estimation – financial and investment performance (Table 7) consists of evaluation of variables:  $X_{41}$  – net return on sales,  $X_{42}$  – return on equity (Table 6).

Variable  $X_{41}$  – net return on sales

corresponds to level C – as average;  $X_{42}$  – return on equity corresponds to level H – as low,  $X_4$  – financial and investment performance corresponds to level C – as average.

Variable estimation  $X_5$  – management quality consists of the evaluation of variables:  $X_{51}$  – the level of the management structure (Table 8),  $X_{52}$  – level of application of modern management methods (Table 9).

We calculate the value  $\mu$  for the level C – as average according to the parameters of the membership function:

16.

Variable  $X_{51}$  – the level of the management structure corresponds to level C – as average.

We calculate the value  $\mu$  for the levels – medium and low, respectively, the parameters of the membership function:

—————  
—————

Variable  $X_{52}$  – level of application of modern management methods according to level C – as average. Variable  $X_5$  – management quality corresponds to level C – as average.  $X_6$  variable estimation – level of social responsibility of the enterprise (Table 10).

We calculate the value  $\mu$  for the level C – as average according to the parameters of the membership function:

18.

Variable  $X_6$  – Level of social responsibility corresponds to level C – ‘what is required’. Estimate of other variables and the resulting estimate is summed up in Table 11.

According to Table 11, strategic competitiveness of Talas Investment Company corresponds to the level of C-C, for which the attack leader – flank attack, the frontal attack is a recommended strategy. The results of the proposed method do not contradict to the results obtained with the use of classical techniques, such as SWOT analysis, GE/McKinsey multifactor model, and others, but unlike the existing ones, the following advantages can be noted: complexity, consistency, considering the dynamics of indicators in space and time, and specifics of the chemical industry. The results of the competitiveness assessment of Talas Investment Company, which are obtained at this stage, are the basis for further configuration of

the competitiveness assessment model.

The problem points of the proposed methodology include the lack of an exhaustive list of evaluation elements, which, on the one hand, indicates its incompleteness, and, on the other, ensures its flexibility and adaptability to the changing conditions of functioning.

## 5. CONCLUSIONS:

The analysis of the competitive environment of the chemical industry ‘Talas Investment Company’ shows that the chemical industry is developing dynamically and increasing its competitive advantage. Competition occurs not only among the most promising sub-sector of consumer goods but also among the enterprises providing services for the industrial production of certain chemicals. This is due to the development of technologies for processing products by chemical conversion and expansion of their application. Based on the survey it was found that for most of the chemical industry, the lack of a comprehensive system of adequate assessment of competitiveness, the lack of interconnection of management decisions and evaluation results are the reasons for low competitiveness.

In such conditions, for the modern enterprise of the chemical industry, the issue of assessment and ensuring the competitiveness not only now, but also for the prospect, is extremely important. According to the proposed method of assessing the competitiveness of the enterprise, we developed a technique for the chemical industry, considering the specifics of its activities. The following factors influencing competitiveness of the enterprise of chemical industry are defined: use of modern technologies and equipment; strong production, research, and experimental base; qualified personnel; stable financial position; pricing and assortment policy; application of modern management methods; social responsibility of the enterprise.

In the course of the work, recommendations on the choice of competitive strategy of the chemical industry are formed, which are based on the results of assessing its competitiveness: tactical competitiveness, competitiveness, and strategic competitiveness.

## 6. REFERENCES:

1. Akhmetshin, E., Morozov, I., Pavlyuk, A., Yumashev, A., Yumasheva, N., Gubarkov, S. *European Research Studies Journal*, **2018a**, 21(1), 352-361.

2. Akhmetshin, E.M., Pavlyuk, A.V., Kokorev, A.S., Lazareva, T.G., Artemova, E.I. *Journal of Applied Economic Sciences*, **2018b**, 13(8), 2309-2322.
3. An, M.-H., Ri, G.-Y., Rim, G.-N. *Journal of the Knowledge Economy*, **2019**, 1-27.
4. Atanelishvili, T., Silagadze, A. *Bulletin of the Georgian National Academy of Sciences*, **2018**, 12(4), 163-166.
5. Beausang, F. *Third World Multinationals: Engine of Competitiveness or New Form of Dependency?* London: Palgrave Macmillan, UK, **2003**.
6. Chursin, A., Makarov, Y. (Eds.). Formation of the Firm Competitiveness MIS Systems. In *Management of Competitiveness: Theory and Practice* (pp. 289–343), Cham: Springer International Publishing, **2015a**.
7. Chursin, A., Makarov, Y. (Eds.). Quantitative Evaluation of the Firm Competitiveness. In *Management of Competitiveness: Theory and Practice* (pp. 193–260), Cham: Springer International Publishing, **2015b**.
8. Chursin, A., Makarov, Y. (Eds.). Theoretical Bases of Competitiveness Management. In *Management of Competitiveness: Theory and Practice* (pp. 83–131), Cham: Springer International Publishing, **2015c**.
9. Čočkaló, D., Jordjević, D., Bogetić, S., Bakator, M., Bešić, C. Competitiveness of Domestic Enterprises in Changing Markets and Industry 4.0. In Monostori, L., Majstorovic, V. D., Hu, S. J., Djurdjanovic, D. (Eds.): *Proceedings of the 4th International Conference on the Industry 4.0 Model for Advanced Manufacturing* (pp. 113–127), Cham: Springer International Publishing, **2019**.
10. Conti, S., Giaccaria, P. (Eds.). Competitiveness and development: from enterprise to place. In *Local Development and Competitiveness* (pp. 133–155), Dordrecht: Springer, Netherlands, **2001**.
11. Gilroy, B. M. International Competitiveness, Multinational Enterprise Technology Clubs, and the Government Interface. In Koch, K.-J., Jaeger, K. (Eds.): *Trade, Growth, and Economic Policy in Open Economies: Essays in Honour of Hans-Jürgen Vosgerau* (pp. 13–30), Berlin, Heidelberg: Springer Berlin Heidelberg, **1998**.
12. Gribust, I. *World Ecology Journal*, **2018**, 8(2), 11-21.
13. Ivashchuk, I. *Skhid*, **2013**, 1(121), 19-23
14. Kruzhilin, S., Baranova, T., Mishenina, M., Zaitseva, M. Regional specificity creation of protective afforestations along highways. *World Ecology Journal*, **2018**, 8(2), 22-32.
15. Lawton, T. C., Hodges, M. R. Promoting Competitiveness: inward investment incentives and enterprise policy. In Lawton, T. C. (Ed.): *European Industrial Policy and Competitiveness: Concepts and Instruments* (pp. 204–225), London: Macmillan Education UK, **1999**.
16. Li, J., Li, M., Gao, Y., Li, J., Su, H., Huang, M. (Eds.). Corporate Level: New Driving Forces and Models for Enhancing the Competitiveness of Chinese Enterprises. In *China's Provincial Economic Competitiveness and Policy Outlook for the 13th Five-year Plan Period (2016-2020)* (pp. 203–235), Singapore: Springer Singapore, **2018**.
17. Liu, J., & Zhu, X. Human Capital Investment: The Fundamental Means to Promote Enterprise Competitiveness. In Liu, Y. (Ed.): *New Interpretations on the Development of China's Non-Governmental Enterprises* (pp. 209–229), Singapore: Springer Singapore, **2017**.
18. Mingaleva, Z., Deputatova, L., Starkov, Y. Management of Organizational Knowledge as a Basis for the Competitiveness of Enterprises in the Digital Economy. In Antipova, T. (Ed.): *Integrated Science in Digital Age* (pp. 203–212), Cham: Springer International Publishing, **2020**.
19. Negrych, O. *Skhid*, **2013**, 3(123), 45-49
20. Nesterenko, S., Rozumenko, S., Kravets, O., Redko, L. Managing Competitiveness of the Enterprise: Theoretical-Methodological Aspect. In Nadykto, V. (Ed.): *Modern Development Paths of Agricultural Production* (pp. 483–492). Cham: Springer International Publishing, **2019**.
21. Pylypenko, O., Murtazina, N. *Skhid*, **2013**, 4(124), 61-65



22. Rusinova, O. *Skhid*, **2014**, 4(130), 58-62.
23. Sharafutdinov, R.I., Gerasimov, V.O., Akhmetshin, E.M., Yumashev, A.V., Pavlyuk, A.V., Luzina, T.V. Inclusive growth index assessment in the regions of the Volga Federal District of the Russian Federation. *Proceedings of the 31st International Business Information Management Association Conference – Innovation Management and Education Excellence through Vision 2020* (pp. 3890-3902). Milan, Italy, **2018**.
24. Shtal, T. V., Bondarenko, L. M., Ukubassova, G. S., Amirbekuly, Y., Toiboldinova, Z. G. *Espacios*, **2018a**, 39(12), 23.
25. Shtal, T. V., Polyakova, Y. O., Hasanov, E. L., Ukubassova, G. S., Kozhabaeva, S. A. *Utopia y Praxis Latinoamericana*, **2018b**, 23(82), 64-82.
26. Silagadze, A. *Bulletin of the Georgian National Academy of Sciences*, **2019**, 13(2), 142-145.
27. Tao, M., Li, Z. Research on the Construction of Enterprise Brand Competitiveness Evaluation System Based on the Integration of SWOT and AHP Model. In Tavarna, M., Patnaik, S. (Eds.): *Recent Developments in Data Science and Business Analytics* (pp. 55–62), Cham: Springer International Publishing, **2018**.
28. Xin, Z. Research on the Relationship Between Enterprise Innovation and the Formation of Core Competitiveness. In Qi, E., Shen, J., Dou, R. (Eds.): *The 19th International Conference on Industrial Engineering and Engineering Management* (pp. 1625–1632), Berlin, Heidelberg: Springer Berlin Heidelberg, **2013**.
29. Yerseitova, A., Issakova, S., Jakisheva, L., Nauryzbekova, A, Moldasheva, A. *Entrepreneurship and Sustainability Issues*, **2018**, 6(2): 558–576. [http://doi.org/10.9770/jesi.2018.6.2\(7\)](http://doi.org/10.9770/jesi.2018.6.2(7)).
30. Zhang, H., Niu, Z. Influence Mechanism of Lean Production to Manufacturing Enterprises' Competitiveness. In Qi, E., Shen, J., Dou, R. (Eds.): *The 19th International Conference on Industrial Engineering and Engineering Management* (pp. 805–813), Berlin, Heidelberg: Springer Berlin Heidelberg, **2013**.

$$X_2 = f(X_{21}, X_{22}, X_{23}) \quad (\text{Eq. 1})$$

$$X_3 = f(X_{31}, X_{32}, X_{33}) \quad (\text{Eq. 2})$$

$$X_4 = f(X_{41}, X_{42}) \quad (\text{Eq. 3})$$

$$X_j = \frac{a_{jf} - a_{j\min}}{a_{j\max} - a_{j\min}} \quad (\text{Eq. 4})$$

$$X_5 = f(X_{51}, X_{52}) \quad (\text{Eq. 5})$$

**Table 1. Indicators of Complex Components of Internal Competitiveness for the Chemical Industry**

Complex components of internal competitiveness	Indicators/Gradations (Levels)		
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>
Sustainability of the marketing system	The effectiveness of the marketing service: the level of efficiency of sales promotion and after-sales service, modern advertising system, and marketing research Gradations (levels) and evaluation of the indicator are determined by experts		
	B, C, H	B, C, H	B, C, H
Sustainability of the production system	Level of application of advanced technologies, technological processes, and equipment	Area of the presence of the enterprise	Share of equipment, or share of own sales channels
	Gradations (levels) and evaluation of the indicator are determined by experts		
	B, C, H	B, C, H	B, C, H
Sustainability of the personnel	Skill level of personnel	Level of personnel management efficiency	Level of the corporate culture
	Gradations (levels) and evaluation of the indicator are determined by experts		
	B, C, H	B, C, H	B, C, H
Financial and investment performance	Return on sales $P/Q_{sales}$		Return on equity $P/K_{part}$
	B, C, H		B, C, H
Management quality	Level of application of modern management methods		The level of the management structure
	Gradations (levels) and evaluation of the indicator are determined by experts		
	B, C, H		B, C, H
Level of social responsibility	Gradations (levels) and evaluation of the indicator are determined by experts		
	No – failure to comply with the requirements of mandatory social responsibility = H		
	What is required – compliance with the requirements of mandatory social responsibility = C		
	Voluntary – voluntary social responsibility, social mission = B		

**Table 2. Point Variable Estimation of  $X_1$  – Sustainability of the Marketing System**

Elements	Points		
	1	2	3
Implementation of market segmentation	1		
Study of consumer needs and preferences	1		
Study of the competitors		2	
The level of control over the quality of services		2	
Trademark use		2	
Consideration of the elasticity of demand in setting the price	1		
Application of discount system from the price		2	
The use of progressive methods of sales	1		
Level of service		2	
Estimate of the services' efficiency	1		
Estimate of the promotional activities' effectiveness	1		
Total		16	

**Table 3. Estimate of the Level of the Advanced Technologies Applied to the Technological Processes and Equipment**

Elements	Estimate
Competitiveness of the technologies used	3
Ensuring the necessary level of quality and competitiveness of products (services)	3
Degree of compliance of equipment and technologies with market features and volumes	2
Capacity building (expansion of existing capacities)	3
Efficiency	2
Flexibility	3
Complexity	3
Universality	2
Ease of adaptation	1
Total	22

**Table 4. Estimate of the Level of Personnel Qualification in Talas Investment Company**

Indicator	Values
Number of employees in the unit on average, persons	120
Number / share of employees working in the specialty, with higher education, persons/ %	110/92
Number of marketers, persons	5
Number / share of marketers with the 'master' qualification level, or the degree of Candidate (Doctor) of Economic Sciences, persons/ %	1/20
Number/share of employees raising their qualification level, persons/ %	7/8.4

**Table 5. Estimate of the Level of the Personnel Management Efficiency (Motivation Of Personnel)**

Elements	Points		
	1	2	3
Application of methods for direct material remuneration (wages, bonuses, participation in profits)			3
Application of methods for indirect material remuneration (tuition fees, insurance, and pension provision)			3
Application of non-material motivation methods (flexible working hours)			3
Creating conditions for internal motivation (interesting work, opportunities for success, and self-realization)			3
Creating conditions for external motivation: recognition, promotion			3
Training of management personnel in motivation methods		2	
Use of the evaluation system for the working contribution to the results			3
System of staff participation in the profits		2	
Personnel participation in enterprise management		2	
Relations with trade unions	1		
Adaptation of personnel to the system of state regulation of labor relations		2	
Personnel recruitment, estimate and placement			3
Selection, estimate, and placement of management personnel (training, retraining and advanced training, formation of the managers' reserve, current assessment and certification, work with consultants and young specialists)			3
Total			33

**Table 6.** Determining the Type of Organization and the Degree of Aggressiveness of the Head

Elements	Points		
	1	2	3
Active attitude to life and business			3
Encouraging reasonable risk		2	
Admittance of errors, non-standard situations		2	
Level of competition			3
Encouraging personnel training			3
Value of time			3
Level of regulation of the organization members' actions		2	
Value of the vertical and horizontal control			3
Value of standards and norms	1		
Support of beliefs and attitudes (myths, religion, rites, and rituals), tolerance		2	
Degree of discrimination (gender, age, etc.)			3
Total		26	

**Table 7.** Results of  $X_{41}$ ,  $X_{42}$  Estimates

	$a_{jmax}$	$a_{jmin}$	$a_{jf}$	$X_{ij}^h$	Estimate
$X_{41}$	0.5	-0.15	0.18	0.5	C
$X_{42}$	0.3	-0.01	0.03	0.1	H

**Table 8.** Estimate of the Management Structure Level

Elements	Points
Commitment of the enterprise	3
Flexibility of the organizational structure	3
Transparency of the organizational structure	3
Efficiency of the enterprise	2
Proportionality of the number and complexity of the manager's tasks to the available time for their solution	1
Spirit of cooperation	2
Awareness of managers	1
Total	15

**Table 9. Estimate of the Level of the Modern Management Methods Application (Processes and Management Methodology)**

Elements	Points		
	1	2	3
Research and diagnostics of the current management system (the use of analytical materials for the study of the management system, organizational diagnosis, technical and economic calculations in various areas and opportunities for the development of the organizational system)		2	
Monitoring of changes in the external and internal environment	1		
Research, experiments, modeling, calculations in various areas to improve the efficiency and effectiveness of the control system	1		
The study of literary sources, the generalization of the world experience of successful enterprises (the results of research, domestic and foreign best practices in the construction of management systems of enterprises working effectively)	1		
Generalization and balancing of the organizational cutoff of other domestic and foreign prosperous enterprises	1		
Monitoring of legislative documents, norms, and standards for building of a management system		2	
Development of plans and programs for organizational development of the enterprise	1		
Application of strategic processes for monitoring and coordination of activities		2	
Use of modern information technologies			3
Creation of data and knowledge banks for the management decision support system	1		
Increase of the organizational and technical level of activity of separate management units and executors			3
Implementation of the system of improving the organization and working conditions	1		
Total		19	

**Table 10. Estimate of Level of the Enterprise's Social Responsibility**

Elements	Points		
	1	2	3
Production of quality products and services for consumers			3
Creation of attractive jobs		2	
Payment of legal salaries and investment in human development		2	
Strict compliance with legal requirements: tax, labor, environmental, etc.			3
Building good-faith relationships with all stakeholders		2	
Efficient business focused on creating added economic value and increasing the welfare of its shareholders		2	
Consideration of public expectations and generally accepted ethical standards in business practices	1		
Contribution to the formation of civil society through the partnership programs and projects of local community development	1		
Total		16	

**Table 11. Summary Estimate of Competitiveness of the 'Talas Investment Company' Chemical Industry Enterprise and its Components**

Complex Components	Indicators	Estimate of the Indicator	Estimate of Complex Indicator	Estimate	
Internal Competitiveness					
Sustainability of the marketing system	Sustainability of the production system		H	C	
	Level of application of advanced technologies to technological processes and equipment	C	B		
Sustainability of the personnel	Area of presence	B	B		
	Share of innovative equipment	B			
	Skill level of personnel	C			
Financial and investment performance	Level of personnel management efficiency	B	C		
	Level of the corporate culture	B			
	Return on sales	C			
Management quality	Return on equity	H	C		
	The level of the management structure	C			
	Level of application of modern management methods	C			
Level of social responsibility			C		
External actions					
Supplier pressure			C		
Consumer pressure			B		
Level of competition			C		
Level of state pressure			B		
Level of STP effect			B		