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DEAR READER!



We present you the 100th anniversary edition of the "Bulletin of the Karaganda University". "Bulletin of the Karaganda University" is the scientific periodical is aimed at publishing in the open press the results of research in various fields of science by scientists from Kazakhstan and other countries. The purpose of the journal is to create an effective environment for the exchange of important scientific and educational information, to acquaint the international scientific community with new methods and ideas. The journal is included in the list of publications recommended by the Committee for Control in Science and Education of the Ministry of Education and Science of the Republic of Kazakhstan for publication of the main results of scientific activity.

The journal was first published in 1996 in two series ("Humanities" and "Natural Sciences"), since 2004 "Mathematics"; "Physics"; "Chemistry"; "Biology. Medicine. Geography."; "Economics"; "Pedagogy"; "Philology"; "History. Philosophy. Law" published materials in eight series, and in 2010 the ninth series was added.

Since 2015, the series "Chemistry", "Physics", "Mathematics" of the journal "Bulletin of the Karaganda University" are included in the platform "Emerging Sources Citation Index (ESCI)" of the international database Web of Science Core Collection. Currently, the Bulletin of the Karaganda University is a prestigious publication that publishes 9 series of research papers in the CIS and Germany, Poland, China, Egypt, Turkey, India and Pakistan, in addition to research on topical issues by domestic scientists. The journal's personal website in 3 languages, complying with international standards, contains the policy of the editorial board, the requirements for online submission of articles and online peer review. All articles published in the journal are assigned a digital object ID. The journal cooperates with leading Kazakhstan and foreign library systems and databases, which in turn provides quick and open access to published materials.

We have a clear signature in the development of science and education of our independent country. I believe that such a rise to the heights of prestige is the result of many years of hard work, constant search and tireless progress. I am convinced that the publication, which has made the solution of the most pressing problems facing humankind its eternal and noble goal, will continue to be the herald of scientific discoveries. We would like to express our gratitude to all the authors and researchers who have contributed to the growth of the scientific potential of the journal, and sincerely congratulate you on the publication of the 100th anniversary edition!

*Chairman of the Editorial Board
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**On the issue of transformational management at the Agency for Civil Service Affairs
in the course of a new remuneration system piloting**

Abstract

Object: is to analyze transformation processes and organizational aspects of the Agency for Civil Service Affairs (hereinafter – the Agency) to determine the guidelines for further improvement of its activities.

Methods: a method of organizational diagnosis, which involves analysis of Strategic plan and organizational structure of the Agency in a prism of foreign experience, description of life cycle, survey of employees as well as the cost-effectiveness analysis of the pilot project in the Agency.

Findings: it was found that (i) despite the direct relationship between bonus payments (or rather the size of the bonus fund) and performance indicators, there is a deterioration in individual indicators. At the same time, the bonus fund has not been adjusted; (ii) the Agency's mission and vision need to be refined in terms of concretization and compliance with the guidelines of the country's strategic documents; (iii) there is a lack of competence, which requires a single state body that will comprehensively address pressing issues of the public administration system; (iv) improvement of business processes in the Agency by taking into account the proposals of respondents.

Conclusions: taking into account the comprehensive diagnostics, the author developed proposals that are aimed not only at improving the Agency's performance, but also at launching systemic changes in the public sector.

Keywords: remuneration, pilot project, transformation, innovative civil service, Good Governance, organizational diagnostics, Agency for Civil Service Affairs.

Introduction

Nowadays we live in a circumstance where not only technologies, but also communication methods are changing rapidly. Citizens' demands not just for timely, but immediate response of the state apparatus to external and internal challenges are increasing. Therefore, any delay from authorities is perceived by the population very acutely. Earlier a law enforcement system and a work of the front offices of state bodies were mainly criticized. But today, taking into account the periodically introduced quarantine regime, the transition to distance learning and work, and the deterioration of the health of citizens, criticism of social services (education, labor, health) has increased. In this regard, the importance of transformation of public authorities in the prism of VUCA world (Volatility, Uncertainty, Complexity, Ambiguity) increases. This should be based on the belief that “there are better ways to serve the interests of the country's citizens than the current and generally accepted ones” (Abouchakra, Khoury, 2015, 25-26).

The critical role of Agile Governance is growing. “The complex, transformative and distributed nature of the Fourth Industrial Revolution demands a new type of governance to address the interlinked dynamics of a pace and synergistic nature of emerging technologies” (World Economic Forum, 2018, 4).

An integral principle of Good Governance is also government openness, which is based on “innovative and sustainable public policies and practices and principles of transparency, accountability and participation that promote democracy and inclusive growth” (OECD, 2016, 34).

According to the World Bank, a quality of public administration in Kazakhstan has improved over the past ten years. However, despite better indicators than in neighboring countries, Kazakhstan lags behind the OECD countries in terms of government performance, reflecting a quality of public services, civil service and its degree of independence from political pressure, a Rule of Law, a quality of legislation and other parameters (World Bank).

At the same time, if we consider two key strategic documents since independence (Strategy 2030 and Strategy 2050), we can clearly see the criticism of the country's leadership of the measures taken to build a "Professional state".

Thus, comparison between the "Priorities" section of the Strategy 2030 and "Achievements" section of the Strategy 2050 demonstrates that the first six areas show significant improvement and confidence in results obtained.

For example, on National security – "We managed to do more than planned", on Infrastructure – "And we were able to do it", on Economic growth – "We managed to solve this task in the shortest time possible by historical standards", etc.

According to the seventh priority – "Professional state" full conviction is not observed. This is evidenced not only by the quote "We should have...", but also by a lack of clarity and completeness of this task in the Strategy 2050.

This conclusion is reinforced by the statement at the end about individual tasks that are being implemented: "Thus, the main tasks set by the Strategy 2030 have been completed, while others are in a process of implementation". In particular, it was planned to complete a reform of the Government and civil service by 2000, as well as to clear incompetent officials who abuse power.

In fact, the civil service reform, in particular, and public administration reform, in general, are continuous and take place permanently in a rapidly changing social and economic environment. Similarly, corruption remains one of the unresolved issues today. At the same time, it is noteworthy that the policy guidelines in this area have changed. In particular, preventive measures and anti-corruption education are becoming increasingly important in place of the fight against corruption.

In this regard, to continue the Strategy 2050 reforms five institutional reforms have been identified, which are aimed at strengthening the state and making the country one of the 30 most developed countries in the world by 2050. In addition, a new Concept for the development of public administration for 2020-2025 is being developed, the main postulates of which are the transformation of the functional approach to managing state tasks; ensuring prompt and effective interaction with citizens.

One of the measures of the reform package is a transition to remuneration of civil servants based on results (grading and bonus system). The pilot project was launched in 2018, and the issue of scaling will be considered if structure, number and expenses of state bodies and subordinate organizations will be optimized. The pilot authorities are the Agency for Civil Service Affairs, the Ministry of Justice and several akimats.

At the same time, as repeatedly noted by the country's leadership and Head of the Agency, this project involves not only increasing the salaries of civil servants, but also launching transformational processes.

This research is part of the dissertation and provides a comprehensive assessment of pilot authority (Agency) through the prism of its diagnostics based on innovativeness and principles of Good Governance in the framework of the country's strategic development priorities until 2050. To do this, the key tasks are defined as follows:

- consideration of theoretical aspects of transformational management;
- specification of the research methodology;
- diagnostics of the Agency for Civil Service Affairs;
- development of proposals to improve the efficiency of the state body.

The research hypothesis suggests that despite significant achievements in the field of civil service, the diagnostics of the Agency for Civil Service Affairs will identify reserves for further development of public sector thru the lenses of the country's strategic goals.

Literature Review

The historiography of transformational management and organizational diagnostics issues is inextricably linked with the permanent development of management theory. A significant contribution to the general management theory in the prism of human resources and organization development was made by R. Owen, C. Babbage, and H. Fayol (the latter author identified five key functions of management).

R. Kalman, S. Simon, J. Forrester have defined the emphasis on the formation of a flexible management structure (project approach) in their research.

In the current reality creative industries of the economy based on knowledge and innovation have developed. Therefore, there is a need for organizational models with a decentralized management structure and focused on employee performance (corporate governance, human resource management).

Accordingly, new approaches to the management of the organization have appeared, the most prominent representatives are I. Adizes, J. Kotter, whose works study not only various aspects of management, but also various types of leadership, the main criteria for the success of changes, employee engagement, company development life cycles, and more.

Today, there are at least 50 different models of transformational management that are used for private companies. There is no universal model, as well as there is no special model for civil service.

All Change Management Models can be divided into four groups:

- 1) contextual – broader strategic or macro models that can be helpful in understand a context of change, or support for change – Nadler and Tushman, congruence model being an example;
- 2) high level – change specific models, but at a broader, sometimes even conceptual model – Carnall, change management model as an example;
- 3) actionable – detailed, with defined stages and actions, for example Accelerating Implementation Methodology (AIM) Change Management Methodology;
- 4) supporting – models that underpin our approach to change, they can apply to specific elements of change or help to understand certain elements, for example – Beckhard and Harris, change formula (Simpson, 2017).

Some models based on individual aspects, such as decision-making process, human capital or IT. Therefore, previous management methods no longer effective and require a comprehensive approach (Hamel, 2008; Mintzberg, 2009; Birkinshaw, 2012; Abouchakra, 2015; Adizes, 2016). What is important today is a comprehensive approach with a set of key factors, which often include Leadership, Strategy, Organization, Human Capital, and Budget.

These factors are more or less present in four models of corporate management, each of which has its own key element of the transformational management concept. Namely:

- 1) southern (humanistic) implies a transition from competitive strategy to strategic renewal through transformational flows;
- 2) eastern (holistic) – transformation of organizational development into cultural dynamics through transcultural, including cross-cultural efforts;
- 3) northern (rationalistic) – intensive development of research and development (R&D) through transdisciplinary areas;
- 4) western (pragmatic) – improvement of the company's management functions, introduction of transpersonal functions (Lessem, 2009; Suleymankadieva, 2016).

At the same time, transformational management often acts as an integrated science of various individual disciplines, such as strategic management, project management, risk management, management of organizational changes in the company, competence management, etc.

However, the study of the literature has shown that often only certain approaches are used to analyze the current state of the organization. There are no comprehensive diagnostic methods that would also demonstrate the groundwork for the future.

Taking into account the above, in this article, the author attempts to systematically analyze various aspects of the organization's development in terms of the effectiveness of the resources spent and the effects obtained, as well as development guidelines taking into account advanced foreign experience.

Methods

The key research method is the method of organizational diagnostics. It is defined as the collection of information about an organization in order to identify problems in its functioning, as well as ways and reserves to solve them (Lipatov, 1994).

This method includes a set of different methods based on qualitative and quantitative data. In particular, the analysis is expected to be carried out thru:

- 1) structural harmony of the state body;
- 2) comparative analysis with similar foreign authorized bodies;
- 3) the organization's life cycle according to the theory of I. Adizes (Adizes, 2017);
- 4) a sociological survey of employees;
- 5) cost effectiveness analysis of the pilot project at the Agency.

The basis for the analysis is the conceptual model of the dissertation research, which consists of five key transformation factors (Leadership, Strategy, Organization, Human Capital, Budget) and a mediation component – Citizen Centricity.

In this regard, for each type of analysis, these factors are represented by corresponding indicators. For example, to study the life cycle of an organization, the “Leadership” factor will be taken into account, to analyze the structural harmony of the organization, the “Strategy” factor is revealed through the analysis of the Agency’s mission, vision and goals, and the “Organization” factor – through the structure of the state body.

At the same time, to study the cost effectiveness of pilot project at the Agency, each of the above mentioned factors is compared to blocks of evaluation system of JSC “Institute of Economic Research” (Goals achievement, Interaction with citizens and Organizational development) and indicators of Agency's statistics (“Net turnover” and “Quality of public services”).

Thus, the applied integrated approach allows a comprehensively assess the authorized body in the field of civil service. As we know, for system changes you need to start from yourself.

Results

Agency diagnostics includes several consecutive stages.

1. First of all, this is an analysis of the strategic guidelines for a development of an organization, a meaning of its existence. Thus, according to the Agency’s Strategic plan for 2017-2021, the mission is to implement a unified state policy in the areas of civil service and control of public services’ quality.

In turn, the vision is a professional state apparatus that ensures a quality implementation of economic programs and a provision of public services.

In fact, the mission is replaced by a competence of the state body and requires improvement in terms of the philosophy of its creation and functioning. An alternative is to focus on a professional, competent and transparent state apparatus that serve the people of Kazakhstan.

The vision should acquire clear horizons and be inextricably linked to the overall development strategy of the country. For example, it can be “A professional state apparatus that ensures 100% achievement of the goals of economic programs, including at least 5.2% of the country’s GDP growth, as well as a high level of satisfaction of the population and business with the quality of public services”.

Turning to the goals and target indicators, it should be noted that they do not fully reflect the possibilities for improving a supervised area, but contain a minimum required set (i.e., they are achievable and not ambitious), which leads to stagnation.

Some goals are not specific and unclear. For example, “Improving an efficiency of a civil service”. To what extent a professionalism of the state apparatus reflected in improving an efficiency of the civil service?

The wording of individual goals is “bureaucratic”. For example, “Improving the control of public services quality”. The Agency and its employees should be focused not on strengthening control, but on creating conditions for preventing violations and promoting digitalization in the provision of public services.

2. Next, we consider the organizational structure through the prism of foreign experience. As stated in the mission, the Agency is entrusted with functions of implementing a unified state policy in the areas of civil service and control the quality of public services. In addition to territorial divisions in all regions, the Agency has as subordinate organizations the Academy of public administration under the President of the country, as well as the National center for civil service personnel management.

For comparison, let’s take, for example, similar departments of such advanced countries in the field of civil service as Singapore and South Korea, whose distinctive feature is the citizen-centric smart government.

These organizations are only assigned functions in the field of civil service and do not include issues of anti-corruption policy (as was previously in the Agency for Civil Service Affairs and Anti-Corruption of Kazakhstan).

Beside this, Public Service Division (Singapore) has:

- the competence to transform the public sector (in Kazakhstan, the functions of public administration and administrative reform are concentrated in the Ministry of National Economy);
- the functions of leadership development;
- a separate Department for maintaining the HR IT-system.

The Ministry of Personnel Management (South Korea) has:

- a more extensive structure for each aspect of the civil service: staff selection, development, remuneration, employment after retirement, etc. (in Kazakhstan, the function of remuneration is assigned to the Ministry of National Economy);
- separate Bureau of innovations.

Thus, both the Agency and the Ministry of National Economy have separate functions for public administration. Therefore, there is a question of creating a unified authorized body accountable to the President of the country, with a temporary moratorium on its reorganization or abolition. Since only over the past five years, the Agency's structural changes have taken place almost annually.

3. Let's consider the political agenda and the "portrait" of the first leader during this period (2015-2020) based on the life cycle of I. Adizes:

- the Agency for Civil Service Affairs was transformed into the Agency for Civil Service Affairs and Anti-Corruption, ACSAAC (Chairman – K. Kozhamzharov) in 2014. This period can be associated with several phases of the life cycle: active performance, youth, prosperity and stability. This is due to a full-scale change in the legal framework for the development of the civil service system. By the end of 2015, all the necessary legislative acts were adopted as part of the first institutional reform of "100 concrete steps" National Plan, which allowed us to move to the stage of stability, i.e. the systematic implementation of new legislation;

- in December 2015 the ACSAAC was abolished by creating the Ministry for Civil Service Affairs (Minister – T. Donakov), which no longer included anti-corruption functions, transferred to the newly formed Bureau following the example of Hong Kong and Singapore. Despite certain "quick wins", the Ministry continued the policy previously implemented by the Agency. At the same time, the structure has become more branched, the staff of the Central office has been increased, including by strengthening the back office. Excessive "bloated" Organizational and control Division of the Administrative Department and other above-mentioned aspects led to the transition to the aristocracy stage;

- with the appointment A. Shpekbaev as a Chairman of the newly established ACSAAC previously implemented policy was continued. A distinctive feature is the initiation of a number of projects and approaches that, although not systemically, have had a positive impact on the civil service, anti-corruption and public services delivery. At the same time, with the launch of a new payment system in pilot mode, the back office transformation has begun. One of the first initiatives was to reduce the number of personnel service employees of the Agency's territorial divisions by 14 times using the example of shared service centers;

- today we are seeing a return to the original set of functions of the Agency under the leadership of new Chairman, who in the new reality of the pandemic and drastic action is needed to transform the government's work on the principles of efficiency, transparency, customer centricity, innovativeness, allowing to give a new stage of development of the organization.

4. The need for changes is also evidenced by the results of a survey of the Agency's employees (70% of the Central apparatus, 2019, April) with an average of 10-15 years of civil service experience. Respondents point to the need for:

- clearly define the strategy and mission;
- changes to the Agency's organizational structure;
- transformational leader;
- digitalization and optimization of business processes for efficient workflow;
- rational distribution of work load;
- delegation of authority (79% of decisions are made at the political level).

These suggestions form a basis of recommendations that are given in the final sections of this article.

5. For a full study of the Agency's work, a cost effectiveness analysis was conducted through the prism of key factors of the author's conceptual model and indicators of the evaluation system of public authorities (Table).

Table. Indicators of Agency's activity for 2017-2019

Factor	Indicators	Year	Agency for Civil Service Affairs	Central authorities' average	Country's average
1	2	3	4	5	6
Effects					
Leadership	Evaluation of overall effectiveness of a state body	2017	89.8%	74.8%	69.4%
		2018	91.2%	75.5%	72.3%
Strategy	Goal achievement	2017	97.4%	79.3%	74.4%
		2018	93.5%	86.3%	82.1%
Organization	Organizational development	2017	78.5%	69.3%	68.8%
		2018	88.5%	71.3%	69.8%
Human	Net turnover	2017	5.7%	6.7%	6.2%

1	2	3	4	5	6
Capital		2018	4.1%	7.0%	6.2%
		2019	4.8%	6.9%	6.0%
Mediating effect					
Citizen Centricity	Quality of public services delivery	2017	79.6%	65.9%	65.9%
		2018	86.6%	69.8%	72.4%
		2019	80.6%	77.1%	74.8%
	Interaction with citizens	2017	84.7%	72.5%	71.0%
		2018	91.6%	71.3%	66.4%
Costs					
Resources	Budget of Payroll Fund	2017	6.6 mln. USD	–	–
		2018	10.5 mln. USD	–	–
		2019	11.5 mln. USD	–	–
<i>Note – compiled by the author based on databases of qogam.gov.kz (2020); data.egov.kz (2020); www.bagalau.kz (2020)</i>					

In accordance with the Table above, almost all indicators are higher than the national average and show positive dynamics. Over the past year (the year of pilot project implementation) there has been a downward trend in preventing high net turnover of personnel and the quality of public services by 0.7% and 6%, respectively.

At the same time, the Agency's payroll expenses increased by 1 million USD due to the bonus payment period. Bonuses are an incentive supplement for effective performance. Thus, there is a question about the size of the bonus fund, taking into account that not all aspects of the Agency's work have shown growth.

Discussion

In general, there are positive changes in the Agency's work. This is evidenced by individual performance indicators, as well as ongoing image-based initiatives (for example, the "Best civil servant" competition) and on behalf of the country's leadership (transferring the work of civil servants to a remote system, crowdsourcing proposals for reengineering of public service delivery).

However, there are no systematic measures to restructure a work of the state apparatus in response to requests of population during the pandemic (rapid response, transparency and access to departmental data, inefficiency of quasi-public sector organizations). Moreover, there is no up-to-date information on implementation of the first institutional reform in general, and the pilot project, in particular.

Thus, returning to the earlier thought, it is proposed to define a single state body responsible for the functioning of the public sector. This can be either the Agency or a body based on the Department of the Presidential Administration, with the transfer of relevant functions and powers in the field of public administration.

In the first case, the Agency's powers need to be expanded, including an inclusion of functions on remuneration, administrative reform, i.e. the transfer of competencies for the development of the public administration system from the Ministry of National Economy. At the same time, it is possible to create divisions for innovative development and transformation of the public sector in the Agency (in fact, today the Agency initiates and coordinates such work on digitalization of public services, introduction of a new system of remuneration, project management, etc.).

In the case of the second option, in addition to transferring the appropriate staff and authority from the Ministry of National Economy, the feasibility of the Agency's functioning should be considered in order to avoid duplication of functions. The proposals will improve the Agency's performance as the main promoter of reforms in the public sector of the economy.

In addition to the system-wide conclusion, it is necessary to note a number of recommendations in relation to the analyzed state body itself.

As we can see from the organizational diagnostics, every aspect needs to be improved. An integrated approach involves starting changes with a clear definition of the mission, strategy, goals and objectives of this body in the light of the country's strategic documents, including the unachieved results of the Strategy 2030 and Strategy 2050. Beside this, the current management of the Agency may be advised not to be afraid of radical transformations of the public sector, taking into account the expectations of the population and business.

Furthermore, it is proposed to reflect on the overall effectiveness of the budget resources spent on the introduction of a new remuneration system, taking into account the results achieved by each pilot project. Since, as follows from open sources such an analysis was not carried out. Therefore, an example of organiza-

tional diagnostics and, in particular, a method of cost-effectiveness analysis, will allow to “honestly” responding to the question about feasibility of a pilot project and necessary adjustments.

Conclusions

As stated at the beginning of the article, in rapidly changing conditions, population expects a prompt response from the state apparatus. Therefore, work restructure of should be carried out everywhere, including central and local authorities, as well as the quasi-public sector.

This type of analysis (organizational diagnostics) allows developing clear recommendations for improving the organization’s performance. This will serve as an additional incentive for systemic changes.

The package of recommendations for direct improvement of business processes in the Agency (taking into account the opinion of respondents) provides:

- decentralization of powers from the level of the Chairman and his deputies, increasing the responsibility of units heads (Department Directors, Heads of independent divisions);
- cancellation of the collection of signatures from many co-executors in the absence of their direct competence on the issue;
- optimization of the number of hardware and other meetings, which are often in the nature of hearing reports on work and performance discipline (this is also reported in writing);
- formation of a common database on statistical accounting using Big Data technology and cloud solutions;
- transition to full paperless document management (implementation of the Paper-Free principle);
- cloud-based document management solutions for efficient remote work, etc.

Taking into account the all recommendations we can conclude that the research hypothesis was confirmed. In this regard, as a practical component the proposals will be recommended to the authorized body and Korn Ferry Hay Group company (project manager). Diagnostics is also planned for the remaining pilot authorities.

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А.К. Әмірова

Мемлекеттік қызмет істері агенттігінде еңбекақы төлеудің жаңа жүйесінің пилоттық жоба барысындағы трансформациялық менеджмент мәселесіне қатысты

Мақсаты: Мемлекеттік қызмет істері агенттігінің (бұдан әрі — Агенттік) қызметін одан әрі жетілдіру бағдарларын айқындау үшін оның трансформациялық процестерін және ұйымдастырушылық аспектілерін талдау болып табылады.

Әдістер: Ұйымдастырушылық диагностика әдісі, оның құрамына шетелдік тәжірибе призмасында Агенттіктің стратегиялық жоспары мен ұйымдық құрылымының параметрлерін талдау, өмірлік циклдің сипаттамасы, қызметкерлерге әлеуметтік сауалнама жүргізу, сондай-ақ Агенттіктегі пилоттық жоба шығындарының тиімділігін бағалау кіреді.

Нәтижелері: (i) бонустар (дәлірек айтқанда бонустық қор мөлшері) мен жұмыс көрсеткіштерінің тікелей өзара байланысына қарамастан, жекелеген индикаторлардың нашарлауы байқалатыны анықталды. Бұл ретте бонустық қор түзетілмеген; (ii) елдің стратегиялық құжаттарын нақтылау және бағдарларға сәйкестігі бөлігінде агенттіктің миссиясы мен пайымын пысықтау талап етіледі; (iii) құзыреттілік бұлдырлығы бар, осыған байланысты мемлекеттік басқару жүйесінің өзекті мәселелерін кешенді шешетін бірыңғай мемлекеттік орган қажет; (iv) респонденттердің ұсыныстарын ескере отырып, Агенттікте бизнес-процестерді жетілдіру талап етіледі.

Қорытынды: Жүргізілген кешенді диагностиканы ескере отырып, автор Агенттіктің жұмысын жетілдіруге ғана емес, сонымен бірге мемлекеттік сектордағы жүйелік өзгерістерді іске қосуға бағытталған ұсыныстар жасаған.

Кілт сөздер: еңбекақы төлеу, пилоттық жоба, трансформация, инновациялық мемлекеттік қызмет, тиімді басқару, ұйымдастырушылық диагностика, Мемлекеттік қызмет істері агенттігі.

А.К. Аморова

К вопросу трансформационного менеджмента в Агентстве по делам государственной службы в ходе пилотирования новой системы оплаты труда

Аннотация

Цель: Целью является анализ трансформационных процессов и организационных аспектов Агентства по делам государственной службы (далее — Агентство) для определения ориентиров дальнейшего совершенствования деятельности.

Методы: Метод организационной диагностики, который включает в себя анализ параметров стратегического плана и организационной структуры Агентства в призме зарубежного опыта, описание жизненного цикла, проведение социологического опроса сотрудников, а также оценку эффективности затрат пилотного проекта в Агентстве.

Результаты: Установлено, что (i), несмотря на прямую взаимосвязь выплаты бонусов (а точнее, размера бонусного фонда) и показателей работы, отмечается ухудшение отдельных индикаторов. При этом бонусный

фонд не корректировался; (ii) требуется доработка миссии и видения Агентства в части конкретизации и соответствия ориентирам стратегических документов страны; (iii) существует размытость компетенции, в связи с чем необходим единый государственный орган, который комплексно будет решать насущные вопросы системы государственного управления; (iv) требуется совершенствование бизнес-процессов в Агентстве с учетом предложений респондентов.

Выводы: На основе проведенной комплексной диагностики автором выработаны предложения, которые направлены не только на совершенствование работы Агентства, но и запуск системных преобразований в государственном секторе.

Ключевые слова: оплата труда, пилотный проект, трансформация, инновационная государственная служба, эффективное управление, организационная диагностика, Агентство по делам государственной службы.

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The labor market of the Republic of Kazakhstan in the context of global challenges

Abstract

Object: The object of the research is analysis of the current state of the labor market of the Republic of Kazakhstan and determination of promising directions of its development.

Methods: Systematic approach, abstract-logical and monographic analysis, horizontal and vertical analysis of official statistical information and the state of the labor market.

Findings: The characteristic of global challenges to the effective functioning of the Kazakhstan labor market is given. A quantitative assessment of indicators characterizing the dynamics of the labor market of the republic was carried out. The structure of employed and unemployed people is given. As a result of comparing the number of vacancies and resumes presented on the electronic labor exchange, it is concluded that there is a shortage of personnel in the republic. The most and least demanded professions are determined. The characteristic of the level of differentiation in wages of workers is given. The analysis of the system of state regulation of the labor market. The methods of regulation aimed at solving the problems of the domestic labor market, both on a planned basis and in emergency situations, are considered. The characteristic of the current results of the implementation of the Program for the Development of Productive Employment and Mass Entrepreneurship for 2017-2021 "Enbek" is given. The main directions of development of the Kazakhstan labor market are determined.

Conclusions: Effective employment should be ensured by increasing competitiveness, professional mobility and efficient use of labor; it is necessary to ensure the priority creation of jobs in high-tech import-substituting and export-oriented industries, training, retraining and advanced training of personnel taking into account the future needs of the economy, improving mechanisms to promote self-employment of the population.

Keywords: labor market, employment and unemployment, state regulation of the labor market.

Introduction

The relevance of the topic of this article is due to global challenges that may entail such significant changes in the labor market as:

– rapid technological development, leading to a change in the requirements for qualifications and skills of the workforce;

– demographic changes in the structure of labor resources: an increase in the number and economic activity of the population over the age of 60, women and people with disabilities;

– the development of a gig economy, which is characterized by the transition of the labor market from the availability of permanent jobs with permanent employment at one employer to temporary projects from different companies with one independent employee (Zakon.kz, 2019);

– A pandemic of the coronavirus infection COVID-19, which caused a decline in production in many countries of the world, which can be considered as the beginning of another “great recession”.

The object of the research is analysis of the current state of the labor market of the Republic of Kazakhstan and determination of promising directions of its development.

The research hypothesis is to determine the adequacy of the system of state regulation of the labor market to global challenges.

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Based on the analysis of literature and statistical information, the authors came to the conclusion that this hypothesis was confirmed - the Kazakhstan labor market demonstrates the ability to function stably in the face of increasing global challenges.

Literature Review

The labor market is a system of social relations that ensures the reproduction and efficient use of the “labor force” product. This market is a mechanism for the distribution and redistribution of labor by type of economic activity based on the criterion of the effectiveness of its use. The labor market provides an opportunity:

- free choice of profession and place of work;
- hiring and dismissing workers in compliance with labor law;
- independent and at the same time economically encouraged internal and external labor migration;
- free movement of wages and other types of employee income while maintaining the priority of the level of education and qualifications, as well as observing the minimum wage established by law (Perova, 2012; Eremin, 1993).

State regulation of the labor market in Kazakhstan is based on the principles of:

- timeliness - synchronization of competitive labor resources with the current staffing need;
- systematic - consideration of subjects and objects of the labor market as a whole, in their interconnection and interdependence;
- goal setting - determination of directions, priorities and prospects for market development;
- feedback and continuity - continuous market monitoring;
- Efficiency - achieving goals and positive associated results.

In the process of managing the development of the labor market, the following types of state regulation are used (Zmiyak, 2011):

- protective, designed to reduce the effects of factors leading to social insecurity of the population of the republic;
- incentive, aimed at creating conditions for the implementation of certain forms of work;
- restrictive, used to exclude the actions of individual citizens or groups of the population, leading to their gaining advantages over others;
- financial and economic, contributing to the growth of supply on the labor market as a result of the use of taxes, subsidies, etc.

Methods

The subject of the study is the analysis of the state and prospects of development of the Kazakhstan labor market. The study was conducted on the basis of a systematic approach, using methods of abstract-logical and monographic analysis, horizontal and vertical analysis of statistical information on the state of the labor market. The information base for the analysis of the labor market of the Republic of Kazakhstan is the data of the Ministry of National Economy of the Republic of Kazakhstan (MNE of the Republic of Kazakhstan), the Ministry of Labor and Social Protection of the Population of the Republic of Kazakhstan and other open sources of information.

Results

In the process of functioning of the labor market, a system of relations is formed between its main subjects - employers and employees, the intermediate links between which may be labor exchanges, private employment agencies, trade unions, etc., which, along with the main subjects, are also elements of the labor market.

From table 1, compiled according to the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan, it can be seen that in 2019 the number of labor in Kazakhstan increased by 2.8% compared to 2014 and amounted to 9214.8 thousand people. or 49.5% of the population of the republic. At the same time, the number of people employed in the economy increased by 3.1% and amounted to 8773.4 thousand people, while the number of unemployed decreased to 443.6 thousand people. (-2.3%). Thus, the employment rate was 95.2%, and the unemployment rate was 4.8%.

In 2019, hired workers accounted for 76% of the total number of employees, self-employed - 24%, which is comparable with countries such as South Korea (25%) and Poland (21%). (Zakon.kz, 2019).

At the same time, during the period under review, the number of employees increased by 9.1%, while the number of self-employed decreased by 12.2%. This indicates the effectiveness of state policy in the field of labor and employment.

Table. Dynamics of the main indicators of the labor market in the Republic of Kazakhstan for 2014-2019

Indicators	2014	2015	2016	2017	2018	2019	2019 to 2014, %
Work force, thous. people	8962,0	8887,6	8998,8	9027,4	9138,6	9214,8	102,8
Busy population, thous. people	8510,1	8433,3	8553,4	8585,2	8695,0	8773,4	103,1
Wage-earners, thous. people	6109,7	6294,9	6342,8	6485,9	6612,5	6667,1	109,1
Self employed, thous. people	2400,4	2138,4	2 210,5	2099,2	2082,5	2106,2	87,8
Self employed, %	28,2	25,4	25,8	24,5	24,0	24,0	- 4,2 p.p.
Unemployed, thous. people	451,9	454,2	445,5	442,3	443,6	441,4	97,7
Unemployment rate, %	5,0	5,1	5,0	4,9	4,9	4,8	- 0,2 p.p.
Youth unemployment rate (aged 15-28 years), %	4,2	4,4	4,1	3,9	3,8	3,7	- 0,5 p.p.
Average monthly nominal wage per employee, tenge	121021	126021	142898	150827	162673	185487	153,3
Nominal wage index, as a percentage of the previous year	110,9	104,2	113,4	105,5	107,9	114,3	+3,4 p.p.
Real wage index, as a percentage of the previous year	103,9	97,7	98,9	98,3	101,7	108,5	+4,6 p.p.

Note - compiled according to the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan.

The largest number of employees live in Almaty (10.7%), Almaty (11.3%), Turkestan (8.9%) and East Kazakhstan (7.7%) regions, the smallest - in North Kazakhstan (3.3%), Mangistau (3.5%), Atyrau (3.6%) and West Kazakhstan (3.7%) regions.

40% of the total number of employees work in the manufacturing sector, and 60% in the service sector.

Almost 70% of employees work in the following types of economic activity:

- wholesale and retail trade; car and motorcycle repair (16.3%);
- agriculture, forestry and fisheries (13.4%);
- education (12.7%);
- industry (12.5%);
- construction (7.3%);
- transport and storage (7.2%).

For five years, the number of self-employed population of the republic decreased by 12.2% and amounted to 2106.2 thousand people, of which 91% are independent workers, 6% are employers, 2% are members of a production cooperative and 1% are unpaid family workers enterprises.

In 2018, the self-employed population of Kazakhstan had the following structure:

- 52.4% of men, 47.6% of women;
- live in cities - 38%, in rural areas - 62%;
- have primary, general and basic secondary education - 35.9%; vocational education - 40.8%; higher and incomplete higher education - 23.2%.

The average duration of a working week at the main job per one self-employed person is 31 hours. At the same time, 60.8% of the total number of self-employed worked 36-40 hours per week, more than 41 hours - 17.4%.

The largest number of self-employed are residents of Turkestan (17.3%), Almaty (13%) and East Kazakhstan (9.6%) regions, the smallest - in the city of Nur-Sultan (1.7%), Mangistau (1.1 %), Atyrau (1.6%), Karaganda (2.8%), Aktobe (2.9%) and Pavlodar (3%) regions.

The largest number of self-employed (71.8%) are people aged 25-54, 14% - aged 55-64 years, 12.2% - aged 16-24 years.

According to the MNE RK, the income of 853 thousand self-employed (40.5%) does not exceed 60 thousand tenge per month, which is 32.4% of the average monthly nominal wage of employees.

From January 1, 2019, citizens providing services to individuals whose total annual income does not exceed 1175 MCI, must make a single comprehensive payment (SCP).

The SCP, the size of which is 1 MCI for urban residents and 0.5 MCI for those living in rural areas, includes four basic payments:

- individual income tax - 10%;
- social contributions to the State Social Insurance Fund - 20%;
- pension contributions to the Unified Accumulative Pension Fund - 30%;
- deductions to the Mandatory Social Health Insurance Fund - 40%.

In the period from January 1, 2019 to January 31, 2020, payments to the budget were made by 297 thousand people who are payers of the SCP, or 14.1% of the self-employed. The total amount of payments amounted to 924.1 million tenge (Azattyq-ruhy.kz, 2020).

In 2019, the number of unemployed in Kazakhstan decreased by 2.3% compared to 2014 and amounted to 441.3 thousand people, or 4.8% of the workforce. The proportion of men among the unemployed was equal to 47.8%, women - 52.2%.

Currently, the unemployment rate in Kazakhstan is below the threshold level of economic security (5%). It is 2.2 times lower than the 2001 level (10.4%), and 1.5 times lower than the pre-crisis 2007 level (7.3%). At the same time, the average duration of the job search period was reduced in comparison with 2004 - by 2.4 times (from 14.9 to 6.2 months)*, and compared with the level of 2007 (11.7 months) - by 1.9 times.

This, in our opinion, indicates a sufficient degree of stability of the Kazakhstan labor market in the face of the global challenges of our time.

The largest number of unemployed live in Almaty (11.4%), Almaty (10.9%), Turkestan (9.5%), East Kazakhstan (7.8%) and Karaganda (6.8%) regions, the smallest - in North Kazakhstan (3.3%), Mangistau (3.5%), West Kazakhstan (3.7%), Atyrau (3.7%) and Kyzylorda (3.8%) regions.

Youth unemployment is a serious socio-economic problem and a threat to the country's social stability not only for Kazakhstan, but also for any other country in the world. The youth unemployment rate in the world is 13%. This is three times higher than that of the adult population (4.3%) (Novoetv.kz, 2019).

According to the Law of the Republic of Kazakhstan "On state youth policy in the Republic of Kazakhstan", people aged 15 to 28 years old belong to young unemployed (Adilet.zan.kz, 2015). From table 1, it can be seen that in 2019, the youth unemployment rate over the past five years has slightly decreased and amounted to 3.7%. The proportion of young people aged 15–28 years is 18.4% of the total number of unemployed in the republic.

The situation on the labor market is complicated by labor migration. According to the Commission on Human Rights under the President of the Republic of Kazakhstan, at present, from 300 to 500 thousand illegal labor migrants are illegally working in the republic. Taking into account legal labor migration, the number of foreign workers in Kazakhstan, mainly in the labor-surplus southern regions, is about 600 thousand people. Employers often give preference to migrant workers, both legal and illegal. This is because in the case of hiring an illegal labor migrant, employers save not only on wages, but also on taxes (Shaukenova, 2017).

Currently, a significant part of the population of the republic searches for work mainly on the Internet through special sites and applications. There is an electronic labor exchange in the republic, an electronic labor exchange, on the website of which in the third quarter of 2019 169.9 thousand vacancies were published. The number of resumes was only 116.9 thousand units. Consequently, for every 100 vacancies, there were 69 resumes.

At the same time, in the city of Nur-Sultan the number of vacancies was 3.4 times higher than the number of resumes (23.4 and 6.8 thous. units, respectively), in the Karaganda region - 2.4 times (16.3 and 6.8 thous. units), in Kostanay region - 4 times (15.9 and 4.0 thous. units), in the city of Almaty - 2 times (14.0 and 7.0 thous. units), in East Kazakhstan region - 1.7 times (12.7 and 7.4 thous. units), in Almaty re-

*There are no official data for earlier periods

gion - 1.5 times (10.1 and 6.7 thous. units), in Pavlodar region - 2 times (10.0 and 4.9 thous. units), in Akmola - 1.5 times (7.0 and 4.8 thous. units) (Kazakhstan Forbes, 2019).

The data presented indicate the presence of a shortage of personnel in the republic.

The following professions were most demanded on the electronic labor exchange:

- security guard (5,4 thous. vacancies);
- car driver (4,2 thous. vacancies);
- nurse (4 thous. vacancies);
- educator (3.9 thous. vacancies);
- Primary school teacher (3.6 thous. vacancies).

At the same time, the excess of the number of submitted resumes over the number of vacancies took place in the professions of lawyer, computer programmer, technical technologist (general profile), economist (general profile) and financier (Kazakhstan Forbes, 2019).

The results of the analysis of the dynamics of wages indicate a steady increase in its nominal value. In 2019, the average monthly nominal wage per employee increased by 1.5 times compared to 2014 and amounted to 185.5 thousand tenge. However, the size of real wages in 2015-2017 tended to decrease.

Mining workers have the highest wages, in which the average wage is 2.1 times higher than the national average, in financial and insurance activities (2 times), in professional, scientific and technical activities (1.8 times).

The lowest level of wages is for workers in agriculture, forestry and fisheries, where it is 62.4% of the average republican level, water supply and sewage systems (65.1%), education (67.1%), healthcare and social services (71, 5%), art (80%).

In the regional context, there is also inequality in terms of wages. The highest level of wages are residents of the Atyrau region, where the average wage is 1.7 times higher than the average republican level, as well as the Mangistau region (1.5 times) and in the city of Nur-Sultan (1.5 times).

The lowest level of wages are residents of the Turkestan region, in which the average wage is 67.7% of the average republican level, North Kazakhstan (69.2%), Almaty (73.8%), Akmola (76.7%), Kyzylorda (78.2%), Kostanay (79.3%) regions and the city of Shymkent (74.8%).

In Kazakhstan, there is a big differentiation in the level of wages of managers and middle managers. Thus, in metallurgy the salaries of managers are 10 times higher than the salaries of mid-level specialists, in the financial sector - 8 times, in construction - 4 times (Kurmanbekov, 2019). The high level of differentiation of workers in terms of wages does not increase their motivation and poses a threat to the socio-economic security of the state.

According to the forecast of the Ministry of Labor and Social Protection of the Population of the Republic of Kazakhstan for the period up to 2025, the labor market in Kazakhstan can develop according to the following scenario:

1 Increase in the population of the republic to 19.8 million people. will lead to an increase in the workforce to 9.8 million.

2 Technological modernization of the economy will lead to an increase in the need for personnel by more than 570 thousand people.

3 The number of medium and high-skilled jobs will increase by 766 thousand, while reducing the number of low-skilled jobs by 530 thousand.

4 As a result of increasing the productivity of social labor, the number of people employed in agriculture will decrease by 343 thousand people, and the released workers will be employed in such types of economic activities as education, construction, transportation, trade and other services (Zakon.kz, 2019).

The development of the Kazakhstan labor market is carried out on the basis of the Enbek program for the development of productive employment and mass entrepreneurship for 2017–2021 (Enbek.kz, 2016), according to which the reduction of unemployment and the increase in the level of employment are ensured in three priority areas:

1 Training in popular professions or the basics of entrepreneurship. From September 1, 2019, free training of the first profession of school graduates who did not enter educational institutions in the amount of 21.6 thousand people was started. 56.4 thousand people were enrolled in short-term professional training, 50.3 thousand people completed training, of which 35.5 thousand people were employed, or 70.6%.

2 Creation of conditions for the development of mass entrepreneurship in cities and rural areas and the expansion of microcredit. As of January 1, 2020, 17774 microloans were issued, of which 15633 (88%) in rural areas and 2141 (12%) in cities. In addition, individuals who complete training under the Enbek Pro-

gram receive state grants for the implementation of new business ideas in the amount of up to 100 MCI, and up to 200 MCI for young people, members of large families and low-income disabled people. As of January 1, 2020, 40,066 state grants were issued, of which 5,328 grants (13.3%) in the amount of up to 100 MCIs, 34,738 grants (86.7) - up to 200 MCIs.

3 Development of labor market institutions promoting employment. In this area, an electronic labor exchange has been created, to which 203 state employment centers, 51 private agencies, 4 media outlets and 7 online sites are connected. In 2019, in the framework of this direction, 139.7 thousand people were employed for subsidized jobs, of which 20.7 thousand people for social jobs. (14.8%), for youth practice - 34.7 thousand people. (24.8%), for public works - 84.3 thousand people (60.3%). (Zakon.kz, 2019; Gov.kz, 2020).

The strategic plan of the Ministry of Labor and Social Protection of the Population of the Republic of Kazakhstan for 2017-2021 contains a set of measures that contribute to increasing the level of employment:

1 Conducting weekly monitoring of the situation at enterprises exposed to the risk of workers being released, which in 2019 covered 390 enterprises with more than 175 thousand employees.

2 The conclusion of memorandums of mutual cooperation between akimats and enterprises of the regions on the stabilization of production processes, ensuring labor rights and guarantees of workers. As of January 1, 2020, 128 thousand memoranda were concluded, covering 90.3% of large and 84.5% of medium and small production enterprises of the republic, which envisage the preservation of more than 2.3 million jobs.

3 Development and implementation of comprehensive employment promotion plans. In 2019, employment measures covered more than 659.6 thousand people, of which 449 thousand were employed.

4 Promoting job creation. As of January 1, 2020, 424 thousand jobs were created, 65.9% of which (279.2 thousand) were permanent jobs, 42.6% (180.8 thousand) were created in rural areas.

5 Joint investment by the state and business of retraining of layoffs and facilitating their further employment in other areas. At the end of 2019, 711 thousand people were covered by active measures to promote employment, of which 527 thousand were employed.

6 Quoting in order to protect the domestic labor market, attracting foreign specialists to Kazakhstan. For 2020, a quota of 29.3 thousand people was established. or 0.32% of the economically active population. (Cov.kz, 2020).

In the context of the economic downturn caused by the COVID-19 pandemic in various countries of the world, the Government of the Republic predicts the possibility of the release of workers, a reduction in the number of new jobs and an increase in this level of unemployment. In this regard, a roadmap was developed containing anti-crisis measures to ensure employment for reconstruction, overhaul and maintenance of social and cultural facilities, housing and communal services and engineering and transport infrastructure.

When implementing such projects:

- at least 50% of employees should be hired in the direction of employment centers;
- the share of the use of goods and services of domestic production cannot be less than 90%;
- salary should not be less than 85 thousand tenge (Kazakhstan Forbes, 2020).

Under the state of emergency introduced in connection with the increase in the number of people infected with coronavirus, the Government of the republic invited entrepreneurs to switch to a remote mode of work, in which, in accordance with Article 138 of the Labor Code of the Republic of Kazakhstan (Labor Code of the Republic of Kazakhstan), time records are regulated by the act of the employer, and wage the payment is paid in the same way as in normal operation (Miko soft, 2015).

If it is impossible to work remotely, employers have the right to introduce an incomplete working hours regime - a shorter working week or a shorter working day. Moreover, according to Article 70 of the Labor Code of the Republic of Kazakhstan, wages are paid in accordance with the actual hours worked.

If an enterprise is forced to stop work, then, in accordance with Article 112 of the Labor Code of the Republic of Kazakhstan, such a situation is recognized as a forced downtime, and the employee has the right to receive wages in the amount not lower than the minimum (42500 tenge).

Discussion

As a result of the analysis of the labor market of the Republic of Kazakhstan, the authors concluded that their research hypothesis was confirmed. In the face of constantly existing global challenges, the Kazakhstan labor market has the ability to function stably. Despite the new coronavirus pandemic, the unemployment rate in the first quarter of 2020 remained at the level of 2019 (4.8%), which indicates the adequacy of state

regulation of labor and employment. As a result of the implementation of the Ebek program for the development of productive employment and mass entrepreneurship for 2017-2021, the unemployment rate, including youth, is below the threshold level of national economic security (5%) (Arbuzov, 2016). We believe that the implementation of the activities of this and other programs to ensure employment should continue after they are completed.

Conclusion

Effective employment that meets the needs of the national economy should be ensured by increasing competitiveness, professional mobility and efficient use of labor.

The development of the Kazakhstan labor market should be carried out in the following main directions:

1 Rationalization of the employment structure based on priority job creation in high-tech import-substituting and export-oriented industries.

2 Improving the quality of vocational training, retraining and advanced training of personnel, taking into account the prospective needs of workers in the economy of the republic in the conditions of rapid technological development, leading to a change in the requirements for qualifications and skills of the workforce.

3 The transition in the context of the development of the gig economy to regulate the labor market from the concept of the availability of permanent jobs with permanent employment with one employer to temporary projects from different companies with one independent employee.

4 An increase in the number of people working remotely.

5 Improving mechanisms to promote self-employment in order to reduce the imbalance between supply and demand in the labor market.

As a result of the study, the hypothesis about the adequacy of the current system of state regulation of the labor market in Kazakhstan was confirmed. The main points and conclusions of the article have elements of scientific novelty, since at present the traditional problems characteristic of the labor market are becoming more acute as a result of increasing global challenges, such as digitalization and the pandemic. In these conditions, the practical significance of recommendations for the development of the Kazakhstan labor market increases.

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А.Б. Бердибеков, А.А. Кайгородцев, И.В. Бордияну, Ханс-Кристиан Браувайлер

Жаһандық сын-қатерлер жағдайындағы Қазақстан Республикасының еңбек нарығы

Аңдатпа

Мақсаты: Қазақстан Республикасының еңбек нарығының қазіргі жағдайын талдау және оны дамытудың перспективалық бағыттарын анықтау.

Әдістер: Жүйелі тәсіл, дерексіз логикалық және монографиялық талдау, ресми статистикалық ақпарат пен еңбек нарығының жай-күйіне көлденең және тік талдау.

Қорытынды: Мақалада Қазақстан Республикасының еңбек нарығына талдау жүргізілді. "Еңбек нарығы" және "еңбек нарығын мемлекеттік реттеу" ұғымдарының мәні ашылды. Қазақстандық еңбек нарығының тиімді жұмыс істеуіне жаһандық сын-қатерлерге сипаттама берілді. Республиканың еңбек нарығының динамикасын сипаттайтын көрсеткіштерге сандық бағалау жүргізілді. Жұмыспен қамтылған және жұмыссыз халық құрылымының сипаттамасы берілген. Электрондық еңбек биржасында ұсынылған бос жұмыс орындары мен түйіндемелердің санын салыстыру нәтижесінде республикада кадрлар тапшылығының болуы туралы қорытынды жасалды. Ең аз талап етілетін мамандықтар анықталды. Қызметкерлердің еңбегіне ақы төлеу бойынша саралау деңгейіне сипаттама берілді. Еңбек нарығын мемлекеттік реттеу жүйесіне талдау жүргізілді. Отандық еңбек нарығының проблемаларын жоспарлы негізде де, төтенше жағдайлар жағдайында да шешуге бағытталған реттеу әдістері қаралды. Өнімді жұмыспен қамтуды және жаппай кәсіпкерлікті дамытудың 2017-2021 жылдарға арналған "Еңбек" бағдарламасын орындаудың ағымдағы нәтижелеріне сипаттама берілді.

Тұжырымдама: Тиімді жұмыспен қамту бәсекеге қабілеттілікті, кәсіби ұтқырлықты және өнімді тиімді пайдалану арқылы қамтамасыз етілуі керек; импорттың орнын басатын және экспортқа бағдарланған жоғары технологиялық өндірістерде жұмыс орындарын басымдықпен құру, экономиканың болашақ қажеттіліктерін ескере отырып, кадрларды даярлау, қайта даярлау және біліктілігін арттыру, халықтың өзін-өзі жұмыспен қамтуға жәрдемдесу тетіктерін жетілдіру.

Кілт сөздер: еңбек нарығы, жұмыспен қамту және жұмыссыздық, еңбек нарығын мемлекеттік реттеу.

А.Б. Бердибеков, А.А. Кайгородцев, И.В. Бордияну, Ханс-Кристиан Браувайлер

Рынок труда Республики Казахстан в условиях глобальных вызовов

Аннотация

Цель: Анализ современного состояния рынка труда Республики Казахстан и определение перспективных направлений его развития.

Методы: Системный подход, абстрактно-логический и монографический анализ, горизонтальный и вертикальный анализ официальной статистической информации и состояния рынка труда.

Результаты: Дана характеристика глобальных вызовов эффективному функционированию казахстанского рынка труда. Проведена количественная оценка показателей, характеризующих динамику рынка труда республики, охарактеризована структура занятого и безработного населения. В результате сопоставления количества вакансий и резюме, представленных на электронной бирже труда, сделан вывод о наличии в республике дефицита кадров. Определены наиболее и наименее востребованные профессии. Дана характеристика уровня дифференциации по оплате труда работников. Проанализирована система государственного регулирования рынка труда. Рассмотрены методы регулирования, нацеленные на решение проблем отечественного рынка труда как на плановой основе, так и в условиях чрезвычайных ситуаций; представлена характеристика текущих результатов выполнения Программы развития продуктивной занятости и массового предпринимательства на 2017-2021 годы «Еңбек». Определены основные направления развития казахстанского рынка труда.

Выводы: Эффективная занятость должна обеспечиваться за счет повышения конкурентоспособности, профессиональной мобильности и эффективности использования рабочей силы; необходимо обеспечить приоритетное создание рабочих мест в высокотехнологичных импортозамещающих и экспортоориентированных

производствах, подготовку, переподготовку и повышение квалификации кадров с учетом перспективных потребностей экономики, совершенствование механизмов содействия самозанятости населения.

Ключевые слова: рынок труда, занятость и безработица, государственное регулирование рынка труда.

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The role of clusters in the modern economy, their advantages and world experience

Abstract

Object: of the article is to study the current state of cluster development in the world, to identify the most successful examples of cluster functioning, as well as the state of cluster development in Ukraine. Accordingly, the subject of the study were clusters.

Methods: abstract-logical, system-structural analysis, comparative analysis, grouping and graphic methods were used in the article.

Finding: as a result of the study, the state of cluster development in the world was assessed, the best examples of cluster functioning, leading regions and leading countries in this process were identified, and their impact was assessed. The state of cluster development in Ukraine was also taken into account.

Conclusions: thus, the economies which use a cluster approach of doing business were analysed. It was found that the most successful in this process is Japan, which has been leading in various rankings for several years. It was also determined that in Ukraine the cluster method of doing business is currently somewhat underdeveloped compared to other countries, and it is at the initial stage of implementation.

Keywords: cluster, economy, multinational enterprise, foreign direct investment, region, World Intellectual Property Organization, research and development, innovation, university.

Introduction

The inflow of foreign direct investment is extremely uneven. And if you look at the world map of the location of economic activity, it becomes clear that there is a steady trend regarding the concentration of economic activity of the MNC in certain regions, where such economic entities as clusters are formed. MNCs form clusters for many reasons. Natural advantages can be part of geographical concentration. For example, the location of companies that produce petroleum products and extract coal is probably influenced by the location of fossil fuel reserves (Rogach, 2019). In the modern economy, they are more mature form of economic agglomeration, and geographical proximity was the basis for the formation of clusters at later stages. (Alan, 2003). The main condition for the emergence of clusters are the presence of a large number of enterprises in one territorial region, which are interconnected by joint activities or research base. Accordingly, more and more countries are seeking to introduce this method of economic activity, for the sake of attractiveness to world MNC.

Literature review

A number of scientists have studied this topic. In particular, it should be noted that the greatest contribution to the theoretical work was done by M. Porter, A. Marshall, E. Feser, C., E. Bergman (Bergman, Feser 2004), Ketels (Ketels, 2017). etc. Empirical testing of hypotheses on the functioning of clusters was carried out in the reports of such international organizations as World Intellectual Property, the European Commission, Deloitte, KPMG, etc.

Methods

The following scientific methods were used in the article as an abstract-logical and system-structural analysis - in the study and clarification of the essence of the "cluster"; comparative analysis and grouping - in the study of world best practices of the concept of cluster development; graphic - when constructing graphs and charts.

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Results

Clusters arise naturally because there are benefits of co-location affect the growth of firms differently in different locations and increase the attractiveness of specific locations for MNC. The process of cluster formation is shaped both by the decisions that firms make regarding the placement of their investments and the methods of competition, as well as by the decisions of governments and other institutions on the appropriate qualities of the business environment specific to the cluster. Within the location, it is the interaction of evolutionary and constructive forces that contributes to the development of the cluster (The European Observatory for Clusters and Industrial, 2018).

Characteristic features of clusters are:

- the presence of a large leading enterprise that combines long-term economic, innovative and other development strategies of the entire system;
- territorial localization of the vast majority of enterprises participating in the cluster system;
- stability of economic relations between the enterprises-participants of the cluster system, the dominant value of these relations for the majority of participants (Legostaeva, 2019).
- socio-cultural proximity of economic agents who form common rules and principles of conduct;
- the presence of intensive vertical and horizontal economic ties, which are based on both market (formal) and non-market (informal) principles of exchange of goods, technologies, services, information and human capital;
- long-term coordination of interaction of participants of the system, within its production programs, innovation processes, basic management systems, quality control, etc.;
- focus of cluster products on export or import substitution;
- availability of modern corporate management systems, control of business processes, collective economic monitoring, etc.;
- a network of public and private local institutions that support cluster members (Boja,2011).

Specialized clusters generate higher growth in the number of higher-paying jobs in eight out of ten industries. They also become placement for MNC, which are constantly expanding their business and the geography of their operations (Baptista, 1998)

Thus, more and more countries around the world are trying to create clusters. The 33 largest clusters in the world according to the World Intellectual Property Organization (WIPO) are located in Asia, 33 - in Europe, 30 - in North America, 3 - in Australia, 1 - in Latin America (fig.1) (WIPO, 2020).

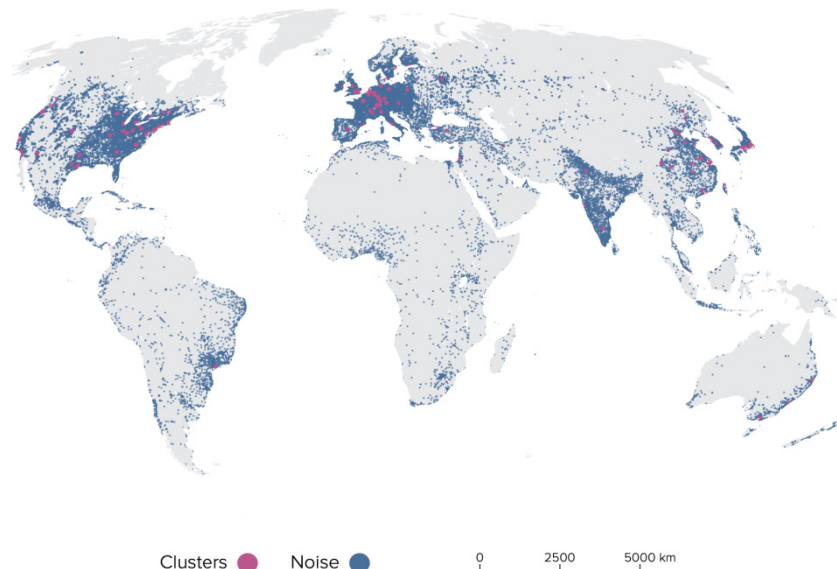


Figure 1. The world's biggest clusters, 2019

Note: (WIPO, 2020).

In the context of analyzing the activities of international clusters, as a rule, their activities are concentrated in those industries where the country and its MNC are competitive globally. For example, Israel is cre-

ating technology clusters, Japan is creating innovation clusters, and South Korea is focusing on the creative economy and innovation (European Cluster Collaboration Platform, 2019).

Regionally, Asia has one of the largest numbers of clusters. As for the countries, China is the undisputed leader in 18 clusters, Japan - 3, South Korea - 3, India - 2, the rest of the countries, including Israel, Iran, Singapore, Taiwan, Turkey have one cluster from the WIPO's rating. (fig. 2) (WIPO, 2020).

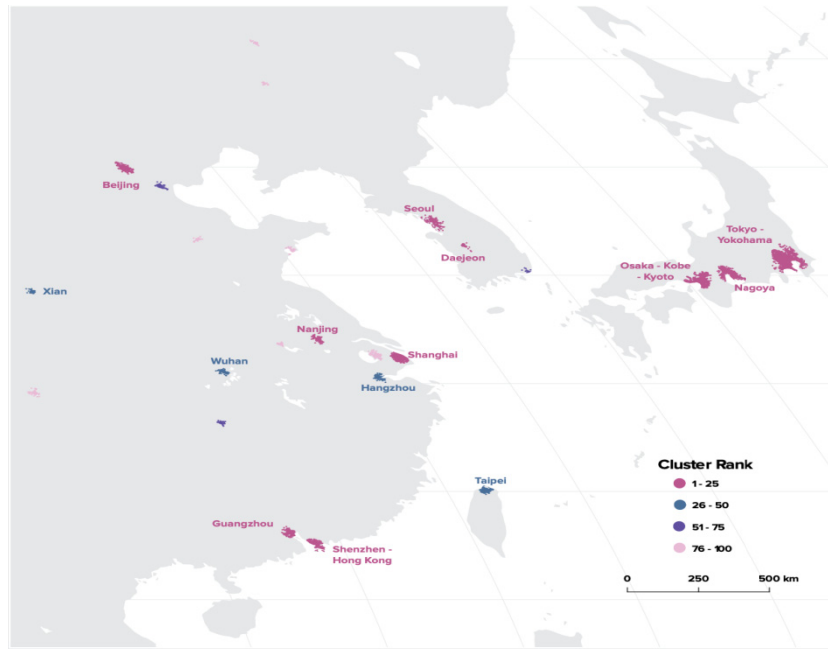


Figure 2. The biggest clusters in Asia, 2019

Note: (WIPO, 2020).

In Europe, the situation is somewhat different. There is no such hegemony of one country as in Asia, but there are also leading countries in the number of created clusters included in the WIPO's ranking. Thus, Germany - 8 clusters, Great Britain - 4, France - 3, Switzerland - 3, Belgium - 2, Spain - 2, Italy - 2, Netherlands - 2, Austria, Ireland, Poland, Russia, Finland and Sweden 1 cluster each (fig. 3) (WIPO, 2020).

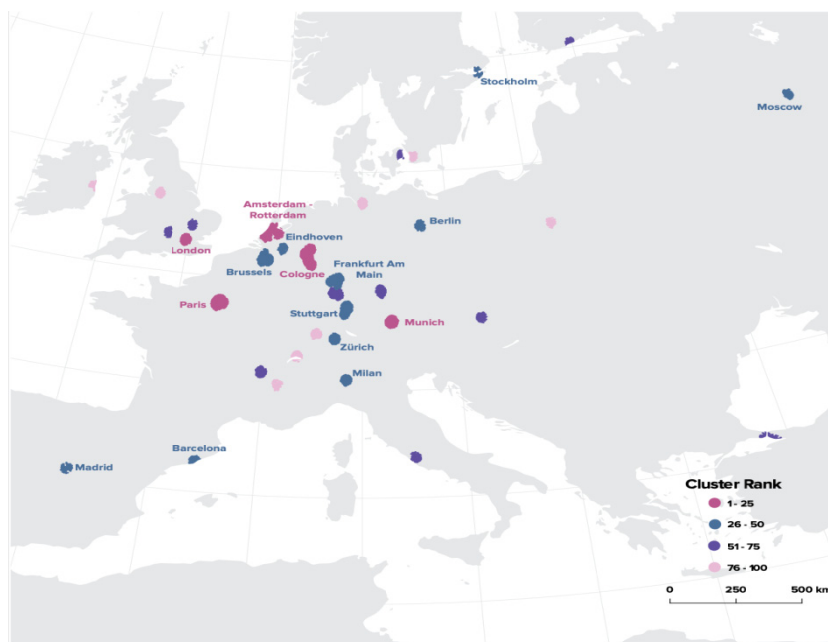


Figure 3. The biggest clusters in Europe, 2019

Note: (WIPO, 2020).

In North America, the championship belongs to the United States, where 26 clusters have been created, which makes the country the world leader in creating the last, which is included in the ranking of the largest clusters in the world, then Canada - 4 clusters (fig. 4) (WIPO, 2020).

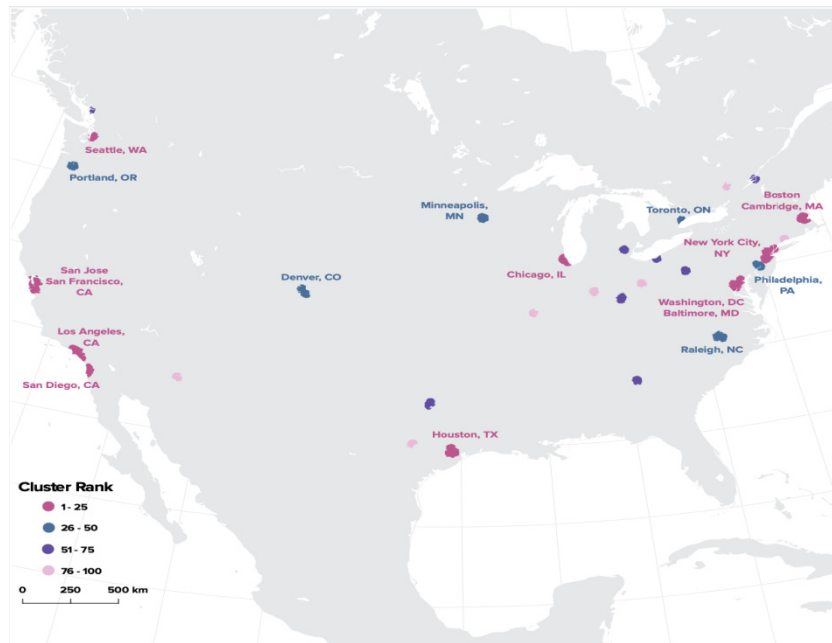


Figure 4. The biggest clusters in North America, 2019

Note: (WIPO, 2020).

The development of clusters leads to the strengthening of the overall rating of the country in the context of economic innovation. Thus, in 2019 the most innovative economies of North America were the United States, in Europe - Switzerland, in West Asia - Israel, in Southeast Asia, East Asia and Oceania - Singapore, in Latin America and the Caribbean - Chile, in Africa - South Africa, in Central and South Asia - India.

It also contributes to the development of R&D at both the public and private levels. Thus, global R&D spending grew faster than the global economy and more than doubled between 1996 and 2016. In 2017, global public spending on R&D increased by about 5%, while R&D expenditure on GNP increased by 6.7%, which is the largest increase since 2011 (fig.5) (Cornell University,2019).



Fig. 5 Expenditures on R&D by states and MNC compared to GDP growth, 2000-2019, %

Note (Cornell University,2019).

However, the largest cluster in the world during 2012-2019 is the Tokyo-Yokohama cluster, or as it is also called "Greater Tokyo". The population of these two cities, which are connected by a powerful cluster, is 44 million people. In 2018, the Cluster ranks second in the world in terms of cooperation with universities included in the QS World Rankings and 60th in the world in terms of the MNC number included in the Fortune 500 ranking companies (Ketels, 2017).

These results have been achieved due to the fact that since the 1980s, Japan has pursued the goal of becoming an economy and a society driven by innovation, science and technology. After the economic and financial crisis that hit Asia in the 1990s, and counter the relocation of production to China and other developing Asian countries, the Japanese government decided to strengthen the competitiveness of the national economy by investing more in R&D and following a cluster approach to strengthening regional ecosystems. The cluster approach was the result of a joint initiative of the Ministry of Economy, Trade and Industry (METI) and the Ministry of Education, Culture and Sports. Such policy has borne benefits and the country's clusters are in the lead (The European Observatory for Clusters and Industrial, 2019).

The rating of the cluster is formed on the basis of 8 indicators that vary from each other. Although "Greater Tokyo" does not occupy a leading position on any of the indicators, but the weighted average of these indicators generally gives the best result (fig.6) (WIPO,2018).

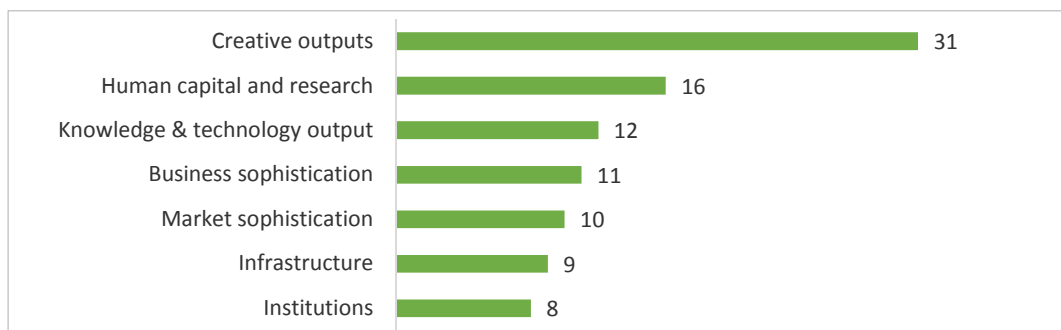


Fig. 6 The place of the Tokyo-Yokohama cluster according to the indicators calculated in the rating, 2019

Note: formed with (WIPO,2018).

The largest recipient of the Tokyo-Yokohama cluster is the Japanese MNC Mitsubishi Electric, as the main areas of research are electronics, machinery, equipment and energy. The main university that cooperates with the organization is the University of Tokyo, which conducts joint research in the field of physics. This cluster also cooperates with another cluster, namely Osaka-Kobe-Kyoto (fig. 7) (WIPO, 2017).

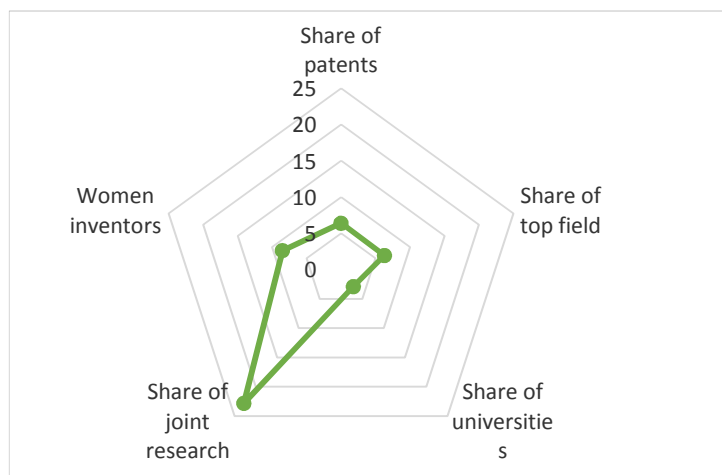


Figure 7. Characteristics of the Tokyo-Yokohama cluster activity in 2017-2019, %

Note: formed with (WIPO, 2017).

As of 2020, there are 36,229,685 people living within the cluster, 313 patents per capita are carried out annually, 397 scientific articles and the total contribution to world research is 0.34%. (WIPO, 2020).

There are also 26 universities and 157 research institutions, with a total of 141,350 researchers working with about 8,250 MNCs. (LIP, 2020).

Discussions

Unfortunately, in Ukraine the cluster form of doing business is not as developed as in other countries. Moreover, statistical cluster accounting has not been introduced in Ukraine so far. There is also no official data on clusters (Borzenko, 2017)

As of 2018, more than 60 cluster entities of various scales are currently functioning and identifying themselves as clusters in the Internet space in the regions of Ukraine. They are created mainly as public organizations and public unions, less often - as societies, corporations, associations or utilities.

Most clusters are in Zaporizhia region, Lviv region, Kharkiv region, in others - from 1 to 4, only in Zhytomyr and Luhansk regions there is no cluster yet.

The vast majority of clusters have been established within the last two to three years, and many of the clusters identified earlier (from the 1990s to 2010) are no longer operational. The initiators of the clusters were mostly business representatives. Although, the clusters were supported by the authorities, some higher education institutions are currently showing cluster initiatives, in particular in Kirovohrad, Kharkiv, and Kherson regions, which provides them with scientific and methodological support. - Many cluster projects are implemented by international organizations, especially today, in the context of decentralization.

Most of the clusters registered in Ukraine are agricultural, but creative ones are gradually emerging.

In the village. Hrytsiv, Khmelnytsky region, a cluster of rural green tourism "Oberig" was created this year. It unites 10 agro-villages that receive tourists who want to relax in the village.

In Poltava region there is a cluster project for producers of ecological products. It focuses on the inspection and control of the production of organic products. Those productions that have passed the inspection are issued a special certificate. It confirms the quality of the implemented eco-technologies.

The Ukrainian-Romanian "First Agrarian Cluster" was created in Chernivtsi region. It combines producers of fruit and berry products and horticultural development. The task of the cluster is to support entrepreneurs at all stages from cultivation to implementation: to maintain interaction between producers and inspectors, transporters and consumers. The work of the cluster is also to improve the investment climate, to negotiate with local governments, to create conditions for the training of necessary specialists.

A regional agro-industrial innovation cluster "Agroinnovation" has been created in Rivne. The cluster focuses on the development and implementation of innovations in the agro-industry of the region. There is also another cluster in Rivne - "Naturalne Moloko". It was founded by agricultural enterprises of Rivne, Ternopil and Lviv regions, working in the field of dairy farming. The cluster serves primarily as a defender of the interests of industries and supports their interaction.

In Vinnytsia region, a food processing cluster has been established within the framework of the EU Sustainable Regional Development Project (SSRD). It helps to unite farmers in cooperatives, to establish partnerships between producers and processors of agricultural products.

The most powerful IT cluster in Ukraine, which includes 65 companies, operates in Lviv. Today IT Park is being built in Lviv - a quarter with 6 office buildings, 2 business centers, a hotel, a shopping center, a university, a kindergarten, the size of 10 hectares (Business associations, 2019).

It is also worth noting the existence of two international clusters in Ukraine. Thus, in the city of Kakhovka, Kherson region. Since 2012, the international, interregional, agro-industrial cluster "Eastern Food Technologies plus" ("Ea.F.Tech +") has been operating. The cluster is aimed at mutually beneficial cooperation in the implementation of a specific commercial project.

"Ea.F.Tech +" - works on the principle of "technological chain", in order to unite the efforts of participants and partners of the cluster, in the framework of project support, in the field of cultivation, collection, storage, pre-sale preparation, processing and sale food, by combining commercial offers from the best players in the market into a single agreed commercial package.

The cluster unites more than twenty commercial companies from Ukraine, Italy, Russia, Lithuania (the process of forming the members of the cluster "Ea.F.Tech +" continues).

The total annual turnover of the cluster member companies is approaching 100,000,000 US dollars, and the cluster member companies employ about 2,000 people.

On March 19, 2018, the Ea.F.Tech + Cluster became a member of the European Cluster Cooperation Platform. (European Cluster Cooperation Platform established by the European Commission under the SME Cluster Internationalization Program, funded by the European Union's COSME program launched by DG GROW in 2016.

Another international cluster in Ukraine is the Association of Automation Industry of Ukraine, which was established in 2011. The mission of the Association is to develop the local market by setting professional standards in the technical field and business development. It represents the interests of the Ukrainian industrial automation community.

The Association functions as a non-governmental and non-profit organization uniting legal entities. The budget of the Association is formed from membership fees, grants and sponsorship fees.

In 2016, the Association created the national movement "Industry 4.0 in Ukraine", which today has more than 80 members.

The mission of the movement is to promote and educate the local market on 4.0 technologies (IoT, artificial intelligence, robotics, etc.).

The Association also works closely with the government in developing innovation, export and industrial policies in Ukraine. In 2016, the Association was a member of the pro-government Digital Agenda Ukraine program, where it developed an initiative for Smart Factory / Industry 4.0 (Business associations, 2019).

Conclusions

Thus, clusters play a significant role in the development of individual cities and attract a significant part of MNC to conduct its economic activities within such groups, as most scientific discoveries, patents, scientific articles and research are made within clusters, which allows individual companies to be global innovators in their niches. Ukraine, as well as a number of other countries, is characterized by increasing the degree of urbanization and overcoming this challenge. However, currently in Ukraine the development of the cluster economy and the creation of clusters is only gaining momentum and does not have such a strong impact on the general welfare of the state as in a number of other countries. However, some cases of implementation of the cluster approach in the economy deserve attention.

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Е.А. Борзенко, А.С. Кропова

Қазіргі заманғы экономикадағы кластерлердің рөлі, олардың артықшылықтары және әлемдік тәжірибесі

Аңдатпа:

Мақсаты: Әлемдегі кластерлік дамудың қазіргі жағдайын зерттеу, кластердің жұмыс жасауының ең сәтті мысалдарын, сондай-ақ Украинадағы кластердің даму жағдайын зерттеу. Тиісінше, зерттеу тақырыбы кластерлер болды.

Әдісі: Дерексіз-логикалық, жүйелік-құрылымдық талдау, салыстырмалы талдау, топтау және графикалық әдістер мақалада қолданылды.

Қорытынды: Зерттеу нәтижесінде әлемдегі кластердің даму жағдайы бағаланды, кластердің жұмыс істеуінің үздік үлгілері, жетекші аймақтар және осы процестегі жетекші елдер анықталды және олардың әсері бағаланды. Украинадағы кластерлік даму жағдайы да ескерілді.

Тұжырымдама: Осылайша бизнесті жүргізудің кластерлік әдісін қолданатын экономикаларға талдау жасалды. Бұл процесте ең табысты болып бірнеше жыл бойы әртүрлі рейтингтерде көш бастап келе жатқан Жапония екені анықталды. Сонымен қатар Украинада бизнесті жүргізудің кластерлік әдісі қазіргі уақытта басқа елдермен салыстырғанда біршама дамымағаны және оны іске асырудың бастапқы сатысында екендігі анықталды.

Кілт сөздер: кластер, экономика, трансұлттық кәсіпорын, тікелей шетелдік инвестициялар, аймақ, зияткерлік меншіктің дүниежүзілік ұйымы, ғылыми-зерттеу, тәжірибелік-конструкторлық жұмыстар, инновациялар, университет.

Е.А. Борзенко, А.С. Кропова

Роль кластеров в современной экономике, их преимущества и мировой опыт

Аннотация

Цель: Изучить текущее состояние кластерного развития в мире, выявить наиболее успешные примеры функционирования кластера, а также состояние кластерного развития в Украине. Соответственно, предметом исследования являются кластеры.

Методы: Основными методами исследования выступают абстрактно-логический, системно-структурный анализ, сравнительный анализ, группирующий и графический методы.

Результаты: В результате исследования оценено состояние развития кластеров в мире, и выявлены лучшие примеры функционирования кластеров, регионы-лидеры и страны-лидеры в этом процессе, определено их влияние. Также было учтено состояние кластерного развития в Украине.

Выводы: Таким образом, проанализированы экономики, использующие кластерный подход к ведению бизнеса. Выяснилось, что наиболее успешной в этом процессе является Япония, которая на протяжении нескольких лет лидирует в различных рейтингах. Также было доказано, что в Украине кластерный метод ведения бизнеса в настоящее время недостаточно развит по сравнению с другими странами и находится на начальной стадии внедрения.

Ключевые слова: кластер, экономика, транснациональное предприятие, прямые иностранные инвестиции, регион, Всемирная организация интеллектуальной собственности, исследования и разработки, инновации, университет.

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Directions of the state policy of technological development of the mining and metallurgical complex of Kazakhstan

Abstract

Object: The purpose of the research is to determine the priorities of Kazakhstan's technological policy aimed at modernizing and developing high-tech production in the domestic metallurgical complex.

Methods: The research used the *method* of system analysis, the method of collecting secondary information, the method of structuring goals.

Results: As the main results, it is necessary to highlight the assessment of the state and definition of the role of the metallurgical complex in the economic potential of the republic, based on the definition of development priorities, recommendations were given on the structural and technological reform of metallurgy in Kazakhstan.

It should be noted that with a high share of the export component in the sales structure of metallurgical enterprises and a constant shortage of metal products in the domestic market, domestic enterprises do not have a strong motivation to expand the range and master new materials.

Conclusions: In our opinion, breakthrough technologies from the existing innovation system should not be expected in the near future, the transfer of technologies is difficult due to existing counterparties: foreign investments of large transnational corporations are aimed at developing the raw material base and attracting mining capacities. In this regard, state policy should be aimed primarily at the complexity and rationality of the use of natural resources.

To ensure a more complete use of the production capacities of the existing enterprises, one of the ways to replenish the retired capacities is to bring into operation poor off-balance ores, as well as re-development of previously worked out areas, reactivation of protective pillars and recovery of ores written off as losses.

Keywords mining and metallurgical complex, metallurgical treatment, modernization, rational use of mineral resources, technological policy, competitiveness of the metallurgical industry, technological structure.

Introduction

The modern development of the world metallurgy is characterized by radical changes associated with a sharp acceleration of scientific and technological progress in the field of production technologies and the quality of manufactured products. The driving force of this process is the innovative nature of capital reproduction, based on scientific achievements, rapid development of new technologies for the production of modern competitive metal products. Kazakhstan needs to develop high technologies in the domestic manufacturing industry, the main share of which is occupied by the export-oriented metallurgical complex.

At the present stage of development in the metallurgical complex of Kazakhstan, there are important issues of determining ways to increase and expand the production of a new technological order. Kazakhstan's metallurgy has always been the flagship of the country's development and the foundation for the well-being of its citizens – it is an industry that can bring income to the budget in foreign currency, comparable to the profit from oil production (Breunig et.al, 2016).

Today, Kazakhstan's metallurgical industry operates in the context of global competition on the world market.

In the context of an open economy and integration into the international division of labor, an active state policy aimed at stimulating progressive structural shifts towards the production of modern metal prod-

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ucts with high added value, improving the efficiency and competitiveness of all sectors of the economy cannot be solved in a short time and will be a priority in the medium and long term. In this regard, in our opinion, it is necessary to gradually implement the strategy for the modernization of metallurgy, since its implementation period is several years.

As the main hypothesis, it is supposed to determine the main state tools for the modernization of the metallurgical industry in Kazakhstan by determining the factors of the industry's competitiveness in the modern economy.

Literature Review

In modern economic theory, the neoclassical paradigm still prevails; or, in any case, neoclassical views should be recognized as the most widespread. I.e., most of the factors of economic growth are not the share of marginal productivity of factors (primarily labor and capital), but the share of «unidentifiable factors» – the contribution of the increase in the total productivity of factors, mainly due to scientific and technological progress.

At the present stage, the neoclassical school uses a different apparatus for studying the influence of «unidentifiable factors» on labor productivity growth. The most scientifically based results are the works of researchers – «evolutionists», their approach to the development of the economy is the development of processes of various durations, cyclical fluctuations. Accordingly, the center of attention are the big cycles of conjuncture (Kondratieff cycles): there are five such cycles and five main technological structures.

This description is quite in line with the theory of economic development of J. Schumpeter, as well as the explanation of cyclical fluctuations in interest rates, which was given in his classic work by N.D. Kondratieff himself (although he linked these cyclical changes rather with changes in the value of the most long-term (passive) part of fixed capital). Naturally, this explanation applies only to the market economy (Byun et al., 2017).

The main attention is paid to the study of real processes, which are determined by:

- the core of the technological paradigm (industry composition);
- its key factor (basic innovation);
- the emerging core of the new order;
- technology-leading countries;
- developed (catching up with leaders) countries;
- advantages of this technological structure in comparison with the previous one;
- economic regulation regimes in leading countries;
- international economic regulation regimes;
- main economic institutions;
- organization of innovative activity in leading countries.

In the growth phase of the dominant technological order, which is characterized by stable growth rates of its constituent industries and the entire economy as a whole, the interest rate remains stable, reflecting stable conditions for the reproduction of social capital.

As the dominant technological order approaches the limits of growth and the rate of profit in its constituent industries decreases, the marginal efficiency of capital investments rapidly decreases. Along with the decline in the expected return on investment, the interest rate falls. At the same time, production and the new technological order remain low profitable and do not attract the attention of business entities. As a result, the capital freed from the industries of the dominant technological order does not find application, despite the decrease in the interest rate. The replacement of technological orders is mediated by a more or less prolonged investment pause, during which the real interest rate may even become negative. With the formation of the reproduction contour of a new technological order and an increase in the efficiency of its constituent industries, both as a result of changes in the system of economic assessments and their technological improvement, accompanied by the formation of new consumer preferences and a corresponding change in the structure of demand, the interest rate increases sharply. In the course of these fluctuations, speculative operations intensify and a significant part of the capital associated in the production of replaced technological capital is depreciated (ElGindi, 2017).

Currently, in Kazakhstan, we can talk about the functioning of four technological orders and weak attempts of the fifth technological order. The spread of technological orders in our republic was much slower than in the USA, Japan, Germany and other foreign countries, as well as Russia.

The priority development of the fifth technological order in the world economy and the emergence of the sixth technological order make it possible to talk about a new quality of economic growth, which is gradually taking the central place in the world economy.

Summarizing the conditions for the development of metallurgy in Kazakhstan and the priorities for the development of the economy of Kazakhstan, in our opinion, scientific research aimed at the formation of a «new economy» and the innovative development of its leading industries are of great relevance. The experience of leading industrial countries has shown that such trends are largely due to a change in the economic role of innovation, the pace of directions and mechanisms for implementing innovation processes (Satybaldin, 2016). Empirical analysis of trends and drivers of economic growth in OECD countries suggests that innovation has become «a key driver of more productive economic growth». This is confirmed by: a sharp increase in such indicators as the multifactor index of labor productivity, reflecting the efficiency of the productive use of labor and capital; the increasing impact of technological progress embodied in investment goods and knowledge embodied in skilled labor.

Structural shifts that involve changes in inter-industry, intra-industry, and macro-economic proportions are aimed at:

- decrease in the share of the primary sector of the economy due to an increase in the share of manufacturing products;
- modernization of production, including technical and technological, improving the competitiveness of products;
- improving the efficient and rational use of natural resources;
- increasing the level of the republic's export potential through the production of science-intensive high-tech products;
- creating conditions for the development of innovative activities;
- promotion of further development of small and medium-sized businesses (Byun, 2017; Lenort et al., 2017).

In a study conducted by the UN, modernization and technological change should affect job creation and income distribution. Ideally, the technologies introduced should create new jobs and at the same time improve the distribution of income in society (Massa, 2015).

If we turn to the specifics of technological changes in the metallurgical industry, researchers point to a number of influencing factors (Wang et al., 2016; Gajdzik, 2019; Sung Park et al., 2019):

1) Enlargement to the level of a global player. In this case, the value allows you to save money due to the volume of purchases from suppliers of raw materials and strengthen your position in negotiations with consumers of steel products. First of all, Chinese companies are seen as new global players.

2) Vertical integration to raw materials processing, since the availability of raw materials continues to be vital, and a small or medium-sized company will not be able to buy raw materials on the free market at an affordable price.

3) Production of niche products with high added value: rails, stainless steel, auto sheet and other types of special steels.

Quite a lot of attention in recent studies of technological modernization is paid to environmentally friendly industries (Jiaa et al., 2017; Dotsenko et al., 2019).

Despite the long study of this problem, the disposal and processing of industrial waste is still not carried out at the proper level. The severity of the problem, despite a sufficient number of solutions, is determined by the increase in the level of formation and accumulation of industrial waste. The efforts of foreign countries are primarily aimed at preventing and minimizing waste generation, and then at recycling, recycling and developing effective methods for final processing, neutralization and final disposal, and disposal only of waste that does not pollute the environment. All these measures undoubtedly reduce the level of negative impact of industrial waste on nature, but do not solve the problem of their progressive accumulation in the environment and, consequently, the increasing danger of harmful substances entering the biosphere under the influence of man-made and natural processes. The variety of products that can be obtained and consumed without waste with the modern development of science and technology is very limited, and can be achieved only in a number of technological chains and only by highly profitable industries.

Methods

In Kazakhstan, the actual minerals and products of their primary processing (including metallurgical processing) make up about 80% of GDP. This determines the great importance of the mineral resource complex and its specific role in the formation of industrial policy.

In this regard, the methodological basis of this study is the concept of Ecologically sustainable industrial development (ESID).

In relation to manufacturing processes, EFM means reducing material and energy costs, eliminating toxic raw materials from the manufacturing process, and reducing the amount and level of toxicity of all emissions and waste before they leave the production process.

When evaluating the «product life cycle», attention is drawn to the fact that in the four – stage cycle scheme, only one stage – «production» - refers to an industry problem. All others are cross-industry tasks. Thus, an event that is useful for the industry will not necessarily be beneficial for the national economy as a whole.

At the same time, some methods of production estimation have been developed in developed countries. In these countries, the technology that has not passed the examination for compliance with the criteria of «environmentally friendly manufacturing» has no prospects in the future. When licensing, experts compare the technology offered for use in production with BAT («Best available technology») – the best available technology, as well as BPT («Best possible technology») – the best possible technology. BAT in contrast to BPT has been implemented in practice, and it is its performance that is compared with the characteristics of the proposed technology.

The emergence of a new class of models of economic growth with endogenous technological progress has caused a noticeable surge of interest in the problems of economic dynamics. As shown by the endogenous growth models published to date, these most universal levers can be:

- development of innovative entrepreneurship and venture financing mechanisms for innovations;
- effective tax regulation;
- wider use of technological transfer opportunities on a national and international scale.

Results

Over the past years, economic growth in Kazakhstan has been largely achieved due to the raw materials industries, but, unfortunately, it has little to do with a qualitative change in the structure of the domestic metallurgical industry, products and services.

Currently, the metallurgy of Kazakhstan is characterized by the third, partly the fourth **treatment**. This situation determines the high resource intensity of GDP, which in turn is associated with the technological diversity of the economy.

The metallurgical complex of the republic unites large corporations for the production of ferrous and non-ferrous metals with a developed infrastructure (« Arcelor Mittal Temirtau» JSC, « SSGPO» JSC, TNC «Kazchrome », «Kazakhmys Corporation» LLP, «Kazzinc» JSC, «Aluminum of Kazakhstan» JSC, etc.) (Table 1) (World Steel in Figures, 2020).

Table 1. Production of the main types of metallurgical industry in Kazakhstan

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Ferroalloys, tons	1 701 790	1 668 689	1 724 065	1 706 931	1 715 137	1 741 920	1 826 340	1 934 774	2 088 638	2 175 767
Tin white and rolled sheet tinned, tons	210 376	206 744	160 507	85 775	76 717	94 614	86 111	no data	no data	60 264
Raw and semi-processed gold or in the form of powder, kg	30 272	36 846	39 903	42 552	50 339	63 614	74 737	85 339	100 288	106 559
Untreated aluminum; aluminum oxide, tons	1 867 309	1 919 158	1 760 412	1 840 159	1 628 252	1 670 215	1 745 801	1 771 697	1 751 472	1 671 129
Unwrought lead, tons	103 400	111 518	88 099	91 072	127 064	120 108	134 192	149 129	152 767	132 669
Unprocessed zinc, tons	318 858	319 847	319 847	320 150	324 946	323 848	325 820	331 018	317 965	318 399
Copper, refined, unprocessed, unalloyed, tons	323 368	338 524	367 161	352 061	294 808	394 641	408 435	426 191	438 115	472 327

Note - compiled by the author on the basis (World Steel in Figures, 2020)

As can be seen from the table, only tin and sheet metal of «Arcelor Mittal Temirtau» JSC technologically belongs to the 4th treatment, the rest of the metals are exported in ingots and slabs, 2nd, maximum 3rd treatment. In addition, the difficult situation on the world ferrous metals market causes an annual decline in production volumes.

At the same time, trends in the production of non-ferrous metals show either growth or production volumes have not changed for ten years.

It should be noted that with all the variety and large volumes of metal products, the production of finished metal products is characterized by insignificant volumes and scarcity of assortment. Such trends in the development of the metallurgical industry in Kazakhstan have attracted the fact that the enterprises of the metallurgical complex export 95% of their products, i.e. for the construction industry that is developing now, and in general for the industry, domestic metal products are not used. The share of the metallurgical complex in the country's total export volume is 35%.

As shown in table 2, in 2018, there were 101 enterprises operating in the ferrous metallurgy, and during the period under review, there was a 2-fold increase in production volumes in value terms.

Table 2. Dynamics of economic indicators in the ferrous metallurgy of Kazakhstan

	2014	2015	2016	2017	2018
Number of enterprises and production facilities	88	94	106	105	101
The volume of industrial production, mln. tenge	759 242	773 549	1 134 246	1 535 768	1 681 332
Industrial production index, as a percentage of the previous year	108,9	100,9	103,6	106,2	98,3
Profit (loss) before tax, mln. tenge	66 332	-35 274	327 476	474 226	312 205
Profitability, as a percentage	7,6	-2,6	42,0	28,2	17,2
Producer price index, as a percentage of the previous year	111,1	95,7	157,2	120,4	112,9
Investments in fixed assets, mln. tenge	145 767	99 532	101 388	59 703	121 005
as a percentage of the previous year	87,5	66,4	97,4	157,7	186,8
<i>Note - compiled by the author on the basis (World Steel in Figures, 2020)</i>					

The variability of profitability, especially in 2015, is explained by global market trends, since almost the entire volume is exported.

The same trend led to negative profitability of non-ferrous metallurgy (Table 3) (World Steel in Figures, 2020).

Table 3. Dynamics of economic indicators in Kazakhstan's non-ferrous metallurgy

	2014	2015	2016	2017	2018
Number of enterprises and production facilities	36	41	45	55	61
The volume of industrial production, mln. tenge	1 145 815	1 360 432	2 239 522	2 531 768	2 921 929
Industrial production index, as a percentage of the previous year	96,2	123,4	108,5	106,3	105,4
Profit (loss) before tax, mln. tenge	89 451	-7 120	517 900	578 624	707 627
Profitability, as a percentage	7,1	-0,5	23,7	24,0	26,0
Producer price index, as a percentage of the previous year	109,3	104,4	149,4	114,6	108,1
Investments in fixed assets, mln. tenge	149 947	218 395	210 201	127 471	147 944
as a percentage of the previous year	111,1	142,2	91,8	58,1	111,1
<i>Note - compiled by the author on the basis (World Steel in Figures, 2020)</i>					

In general, in the dynamics it should be noted a sufficient increase in the number of enterprises in the industry, an almost 3-fold increase in the volume of production in value terms.

Ferrous metallurgy occupies a priority place in the development of the mining and metallurgical complex. Kazakhstan ranks eighth in the world in terms of iron ore reserves (after Russia, Ukraine, the USA, Australia, Brazil, Canada and South Africa). Its share in world reserves is 6%. In addition to significant reserves, another advantage of Kazakhstan's iron ore is its fairly high quality: out of 8.7 billion tons of iron ore, 73.3% of the reserves are easily extracted. In addition the country is relatively well provided with reserves of iron easily rich ores: it is more than 50 years old.

A general analysis of the state of production in the metallurgical complex of the Republic of Kazakhstan allows us to conclude that at present:

- there is practically no industrial production of science-intensive, high-tech, special materials and alloys for the development of modern production in the country;
- the required range of rolled products and metal products is not produced for machine-building, oil and gas, mining and metallurgical, light, food and other industries, construction industry, heavy engineering and shipbuilding;
- there are no industrial production of materials and metal products based on the latest technologies - powder metallurgy, electrometallurgy, electroplating, new foundry and chemical technologies, etc.;
- secondary resources of metals are not used efficiently, the balance of which is not fully taken into account.

In general, the domestic mining and metallurgical complex is characterized by relatively outdated technologies of the metallurgical limit and high physical wear and tear of fixed assets, which is reflected in the level of energy consumption, labor intensity and material consumption of production and determines the lag in technical development from its competitors..

This state, on the one hand, due to dumping prices, allows us to maintain high demand for metal products, but on the other hand, it contributes to slowing down scientific and technological progress, reducing competitiveness in world markets, and reducing the efficiency of metallurgy as a whole by reducing factor competitive advantages.

On the whole, some large enterprises of ferrous and nonferrous metallurgy have managed to adapt to new market conditions and are now one of the influential factors in the growth of the regional economy. The existing integration formations have a positive impact on the formation of new industries in metallurgy (in particular, the production of coking coal in the Karaganda basin, a fairly strong iron ore base is owned by «Arcelor Mittal Temirtau» JSC), the problems of development of consumer industries: machine building and metalworking, construction and agro-industrial complex, etc., the presence of bottlenecks in production chains, etc.

The level of consumption of metal products per capita in Kazakhstan is significantly lower than in the developed countries of the world, which gives grounds for optimistic forecasts of the development of domestic demand for metal products. In this regard, it is necessary to focus primarily on domestic markets. However, it should be noted that the possibilities for increasing steel production at the expense of the existing domestic capacities are practically exhausted. This allows us to state that the period of development of the industry based on a more complete use of existing capacities is generally over. The investment resources of the industry are largely determined by the profitability of production, which in turn depends on the level of prices for metal products. Therefore, for the prospects for the development of the domestic metallurgical industry, an unbiased assessment of the price situation on the metal products market is of great importance. A further increase in steel production is impossible without significant investments in the construction of new steel-making facilities and modernization of production.

Discussions

In Kazakhstan, the actual minerals and products of their primary processing (including metallurgical treatment) make up about 80% of GDP. This determines the great importance of the mineral resource complex and its specific role in the formation of industrial policy.

Based on this, priority directions of restructuring of the metallurgical industry of the economy follow, which plays a major role in improving the manufacturability of production, as the main supplier of ferrous, non-ferrous and rare metals and products from them. It is necessary to take into account the fact that the construction and reconstruction of metallurgical plants requires one-time large investments. During the period of the plant's design cycle, the composition and structure of raw materials change, and part of the equipment becomes morally and physically obsolete. In such a situation, even the preservation of technological indicators for the extraction of metals and their quality is a rather difficult task. In this regard, innovative activities in the field of metallurgy restructuring primarily include:

- Involvement in processing of new types of raw materials (often of inferior quality) and technogenic formations of both our own and enterprises of other industries;
- mastering new technologies and equipment, including resource and energy saving processes and processing modes;
- creation of new types of marketable products;

– improving the environmental safety of processes and the use of new treatment equipment.

In addition, the growing world globalization, as well as the formation of integrated metallurgical consortia among the world's largest metal producers, are of great importance for the national metallurgy. Hence, a new industrial policy in the development of the metallurgical complex of Kazakhstan should be formed taking into account both its links with the world economy and systemic risks caused by the disproportions in the existing sectoral structure of the metallurgical industry. This implies a combination of effective management of metal ores and their metallurgical treatments with the desire to expand the scale of the national economy by moving to a greater variety of metallurgical products and entering new markets. Movement along this path is impossible without a versatile technological, organizational and managerial renewal.

In Kazakhstan, in recent years, efforts have been made at the state level to work out a development strategy for the domestic ferrous metallurgy. However, the existing strategic developments do not pay sufficient attention to the organizational factors of the industry's competitiveness, do not take into account the trends of the post-industrial economy. As guidelines for organizational transformations in the industry, it is proposed to consider, in particular, the following:

- entry of even medium and small metallurgical enterprises with promising niches into clusters or business groups of metallurgical or machine-building composition;
- the formation of integrated structures from metallurgical enterprises of various profiles and dealer networks, which will allow consumers to purchase all the necessary metal products in one place. In the long term, the needs for a wide range of structural materials should be met in this way;
- accelerated development of a service for high-quality rolled metal processing according to customer requirements within the framework of the integration of metal suppliers and its consumers;
- development of cooperation between leading metallurgical companies, including joint measures to support domestic heavy engineering, joint research projects.

Summarizing the above, the following factors of the competitiveness of metallurgical production, differentiated at the macro and micro levels, can be distinguished (Figure 1).

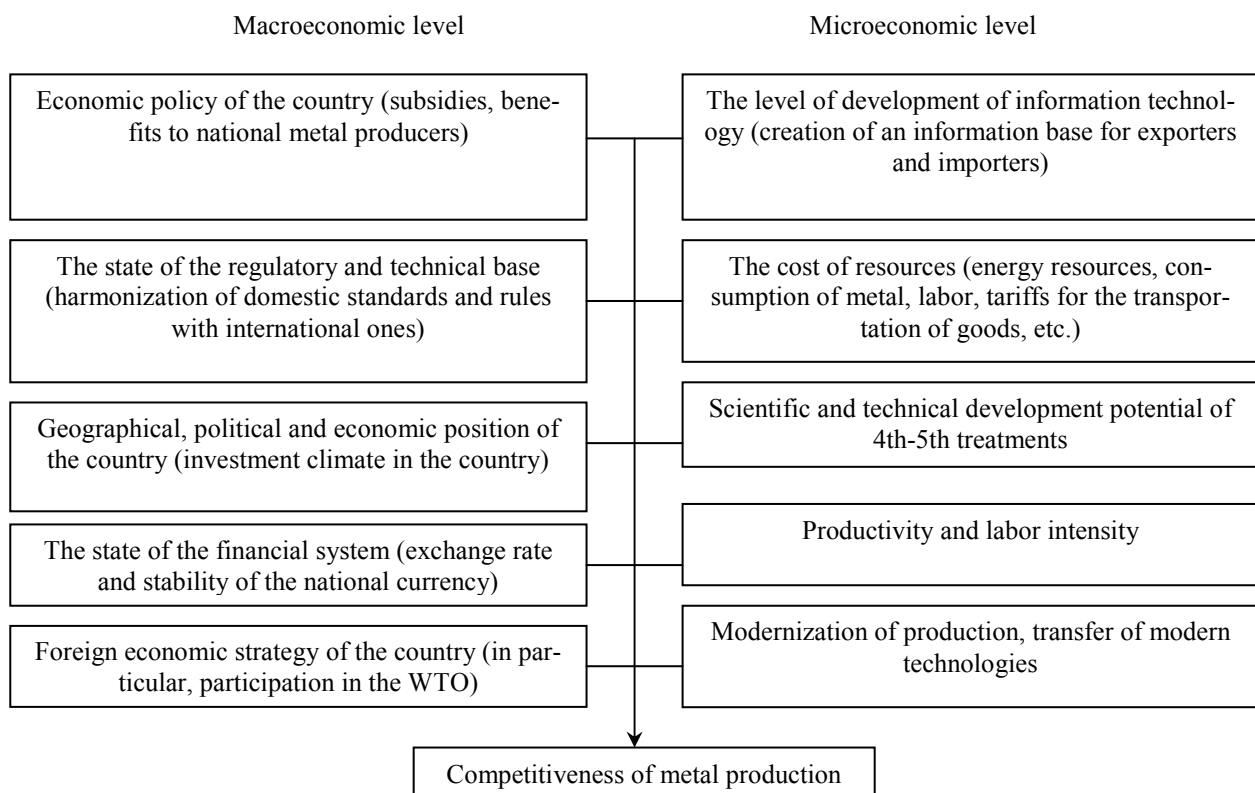


Figure 1. Macro-and micro-economic factors of competitiveness of steel products

Note – compiled by authors

In the near future, one of the factors of economic development, increasing competitiveness and strengthening the export potential of domestic producers is expected to increase the volume of capital investments. An additional source of stimulating the development of export-oriented industries should be joint (state and non-state) financing of investment projects using international leasing.

Achieving high competitiveness of industrial producers should be a priority of the country's economic policy, since their successful functioning is a necessary condition for national security, improving the living standards of the country's population, saturating the domestic market and ensuring successful integration into the global economic process.

The general activities of developed country governments in this regard are:

- implementation of a unified state policy to improve competitiveness, using economic, legal and political means;
- support of priority areas of development of the metallurgical industry and promotion of structural changes in the mining and metallurgical complex;
- implementation of state support for national metal producers and protection of the domestic market, including measures for marketing support of domestic producers' products;
- promotion of market infrastructure development (creation of a competitive environment, introduction of international certification, introduction of harmonized quality assessment systems and standards).

Conclusions

In order to maintain and increase the positive production and economic dynamics of the development of the metallurgical plant in Kazakhstan, increase the competitiveness of the manufactured metal products, increase export earnings, it is necessary to concentrate financial and technical resources, diversify production within this production along the full cycle technological chain (mining, dressing, metallurgical treatment), expansion of domestic and foreign sales markets.

In metallurgy, the planning and forecasting horizon has a 7-10 year perspective. These horizons are primarily associated with high investment costs. Organization of the 4th-5th treatment in metallurgy is capital-intensive projects that business is clearly not able to handle without very large investments in infrastructure.

The modernization of production, increasing the competitiveness of products, the search for new promising markets and consumers require not only active government support in developing a balanced industrial, foreign trade and tax policy, but also significant investment resources.

Achieving these goals of the state policy for the development of metallurgy requires the implementation of a set of measures to create a favorable investment climate in the country, support investment initiatives in the market sector of the economy, and create legislative and institutional conditions for the economic activities of private investors that are adequate to modern market requirements.

In connection with the above, the main principles of state policy will be:

- in the field of creating a favorable investment climate in metallurgy:
 - strengthening the role of the state as a guarantor of maintaining a favorable and predictable regulatory regime for the economic activity of domestic and foreign investors; publicity of the state investment policy;
 - creation of equal competitive conditions for economic activity for all investors, regardless of the form of ownership, contributing to the efficient allocation of capital and sustainable economic development;
 - introduction of effective legislative and practical mechanisms to protect the interests and rights of investors in the implementation of investment projects;
 - liberalization of the market for investment projects by simplifying the approval procedures and obtaining permits for their development and implementation;
 - ensuring the opportunity for investors to obtain reliable information about organizations in order to analyze and select investment objects;
 - assistance in the formation of a modern institutional infrastructure of the investment market, ensuring the effective transformation of savings of the national economy into investments in metallurgical production.
- in the field of public investment:
 - strengthening the social orientation of investment activities in the country, the unconditional priority of investments in solving problems of fundamental and applied science in the field of metallurgy;

- openness and predictability of the state investment policy, stimulation of attracting capital from the non-state sector for solving the priority tasks of metallurgy development;
 - prioritization of state support for strategically important infrastructure facilities for the country, contributing to an innovative and technological breakthrough in metallurgy.
- in the field of supporting investment activities of the private sector of the economy:
- creating conditions for increasing the investment potential of metallurgical enterprises in Kazakhstan by reducing the tax burden, improving the depreciation policy;
 - liberalization of foreign trade and tax regime for the import to Kazakhstan of modern technological equipment required for the modernization of existing metallurgical enterprises.

In order to effectively finance the modernization processes in the metallurgical industry aimed at the development of 4th-5th treatment, it is necessary to consider mechanisms that facilitate the flow of financial capital from the main sources of investment in this sector of the economy

Thus, for the sustainable and dynamic development of metallurgy, it is necessary to increase the efficiency of the financial intermediation system, designed to ensure the accumulation of temporarily free funds of individuals and legal entities and the transformation of savings into investments.

Complementary Data

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Қазақстанның кен-металлургиялық кешенінің технологиялық дамуының мемлекеттік саясатының бағыттары

Аңдатпа

Мақсаты: Отандық металлургиялық кешендегі жоғары технологиялық өндірістің дамуы мен оны модернизациялауға бағытталған, Қазақстанның технологиялық саясатының алғы шарттарын анықтау.

Әдісі: зерттеуді жүргізу кезінде жүйелік талдау, қосымша ақпараттарды жинау, мақсаттарды құрылымдау әдістері қолданылды.

Қорытынды: Республиканың экономикалық потенциалындағы металлургиялық кешеннің жағдайын бағалау мен рөлін анықтау негізгі нәтижелер болып табылады, дамудың алғы шарттарын анықтау негізінде Қазақстанның металлургиясын құрылымдық-технологиялық реформалау бойынша нұсқаулар берілді. Сондықтан, ішкі нарықтағы металөнімдерінің күнделікті қолданылуы және металлургиялық кәсіпорындардың өткізу құрылымында экспорттық құрамның жоғары үлесі кезіндегі отандық кәсіпорындарда сортты кеңейтуге және жаңа материалдарды меңгеруге күшті мотивация жоқ.

Тұжырымдама: Біздің ойымызда, жақын арада бар инновациялық жүйеден жаңа технологияларды күту қажет емес, технологиялар трансферті қалыптасқан контрагенттерге байланысты қиын: күрделі трансұлттық корпорациялардың шетелдік инвестициялары шикізат базасын дамытуға және өндіру күштерін арттыруға бағытталған. Осыған байланысты, мемлекеттік саясат ең алдымен табиғи ресурстарды пайдаланудың кешенділігі мен тиімділігіне болуы керек.

Өрекет етуші кәсіпорындардың өндірістік күштерін толық пайдалануды қамтамасыз етуге арналған істен шыққан кендерді қалпына келтіру жолдарының бірі кедей баланстан кендерді эксплуатациялауға тарту, сондай-ақ бұрын істеген учаскелерді консервациялау және шығынға жабылған кендерді алу.

Кілт сөздер: тау-металлургиялық кешен, металлургиялық қайта өндіру, модернизация, минералды-шикізат ресурстарын тиімді пайдалану, технологиялық саланың бәсеке қабілеттілігі, технологиялық құрылыс.

А.К. Кабдыбай, Н.Д. Кенжебеков, Д.И. Сыздыкова, Д.Н. Улыбышев, Е.Б. Жайлауов

Направления государственной политики технологического развития горно-металлургического комплекса Казахстана

Аннотация

Цель: Цель заключается в определении приоритетов технологической политики Казахстана, направленных на модернизацию и развитие высокотехнологичного производства в отечественном металлургическом комплексе.

Методы: При проведении исследования использованы методы системного анализа, сбора вторичной информации и структуризации целей.

Результаты: В качестве основных результатов следует выделить оценку состояния и определения роли металлургического комплекса в экономическом потенциале республики, на основе определения приоритетов развития были даны рекомендации по структурно-технологическому реформированию металлургии Казахстана. Необходимо отметить, что при высокой доле экспортной составляющей в структуре сбыта металлургических предприятий и постоянном дефиците металлопродукции на внутреннем рынке у отечественных предприятий нет сильной мотивации заниматься расширением сортамента и освоением новых материалов.

Выводы: По нашему мнению, прорывных технологий от существующей инновационной системы в ближайшее время не стоит ожидать, трансферт технологий затруднен в силу сложившихся контр-

агентов: иностранные инвестиции крупных транснациональных корпораций направлены на развитие сырьевой базы и увеличение добывающих мощностей. В этой связи государственная политика должна быть направлена, в первую очередь, на комплексность и рациональность использования природных ресурсов. Для обеспечения более полного использования производственных мощностей действующих предприятий одним из путей восполнения выбывающих мощностей является вовлечение в эксплуатацию бедных забалансовых руд, а также повторная разработка ранее отработанных участков, расконсервация охранных целиков и извлечение списанных в потери руд.

Ключевые слова: горно-металлургический комплекс, металлургический передел, модернизация, рациональное использование минерально-сырьевых ресурсов, технологическая политика, конкурентоспособность металлургической отрасли, технологический уклад.

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Priority directions of innovative development of the agro-industrial complex of Kazakhstan

Abstract

Object: The purpose of the study is to determine the attitude and needs of agricultural producers in Kazakhstan in innovative technologies, to determine the directions of appropriate state support for these processes on the basis of a corresponding sociological survey.

Methods: We used the methods of pilot sociological research on topical issues of innovative development of entrepreneurs of the agro-industrial complex of Kazakhstan, including such issues as state support for innovation, financing of activities and innovative processes, long-term and short-term plans of market participants, prospects for entering the foreign market through the introduction of innovative technologies.

Findings: The data obtained in this pilot study are general in nature and their analysis will not make any final conclusions on the situation related to the activities of agricultural companies in the conditions of priority of innovation as one of the factors determining the overall situation of business development within the agro-industrial complex. As part of this study, we set the task to find out why the agricultural sector is not attractive to scientists and innovators, although there are specific results of the development and implementation of innovative technologies in Kazakhstan.

Conclusions: Development of innovations and promotion of technological modernization of the agro-industrial complex of Kazakhstan should be aimed at sustainable development of agro-industrial enterprises through:

- orientation of applied science to the tasks of agricultural modernization, creation of an effective system for generating and using innovations in the rural economy;
- formation and development of a management system for innovative and technological development, including a system of technological forecasting and planning, development and implementation of programs for innovative and technological development of the agro-industrial complex of Kazakhstan.

Keywords: agro-industrial complex, innovative entrepreneurship, new technologies, dissemination of innovative knowledge, innovative management.

Introduction

Kazakhstan's accession to the Eurasian economic Union (EAEU) has had a certain impact on the country's agro-industrial complex. Some forms of state support for the industry have also changed, and customs barriers have been reduced and, in some cases, completely eliminated. In terms of the inevitably emerging in the EAEU market competition further improvement of the approaches to the solution of problems of innovative development of agro-industrial complex is one of the fundamental prerequisites of the modernized approach to change management of these large economic systems such as agriculture. And this remains one of the main issues.

Today, Kazakhstan's agribusiness companies increasingly have to rely on their own resources. However, many analysts and business representatives consider it impossible to maintain the profitability of existing agribusiness companies without significant state support for innovative development of the industry. Recently, there has been a certain reduction in investment in the agro-industrial complex, which, along with inflation, rising prices for all types of resources, including credit, and a decrease in the purchasing power of the population, probably negatively affects the innovative development of the agro-industrial complex.

The agro-industrial complex of Kazakhstan, in which a significant share is occupied directly by agriculture, is in urgent need of innovative high-tech technologies. This need is caused not only by low indicators of

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labor productivity in agriculture, but also by the lack of a critical mass of developed and implemented high-tech innovations of domestic scientists. This problem is also compounded by the fact that in Kazakhstan over the past two decades, a specialized scientific and innovative infrastructure has been actively formed and operates, the main task of which is to activate innovative processes in the agricultural sector of Kazakhstan. Therefore, the lack of tangible results in agricultural production in the form of mass developed and implemented scientific developments of domestic scientists leads to the search for reasons that hinder these processes not only in the innovation system of the agro-industrial complex, which includes authorized state and quasi-state organizations, industry research institutes and research universities, but also economic entities in the sector of agro-industrial entrepreneurship. It is the problems with the latter that can become the main obstacle to the activation of scientific and innovative processes in the agricultural sector of Kazakhstan. Therefore, in the framework of this study, through a survey of entrepreneurs in the agricultural sector, their attitude to the innovative infrastructure and prospects for the development of innovative processes in agricultural production will be revealed.

Literature Review

Issues of innovative development of the agricultural sector, and in particular agriculture, have been considered in many scientific publications, among which we would like to mention the works of (Abalkin, 2009) and (Bunin, 2004), in which the need for innovative development of agriculture is put not only from the position of ensuring the competitiveness of the industry and increasing labor productivity, but also from the position of ensuring economic and food security of the national economy. Since it is the agricultural sector and its products that meet the primary needs of the population, and the development of its innovative potential depends on the possibility of sustainable development not only of the complex itself, but also of the national economy as a whole. Therefore, a number of Kazakhstani authors, such as (Sabden, 2006), (Nakipova et al., 2012a, 2012b), (Kamenova, 2017), (Aimurzina, 2019), (Taubayev, 2017) in their research, they considered various aspects of the development of the agro-industrial sector in Kazakhstan, in particular, the issues of forecasting the main trajectories of sustainable development of the industry, ensuring the competitiveness of the industry and production, and studying the impact on food security factors that are associated with the development of innovative processes in the agricultural sector. Among foreign authors, I would like to mention the research of (Elnasri, 2017) and (Fombang, 2018), which are related to the topic of our research, in terms of determining the expectations and needs of entrepreneurs from the introduction of innovative technologies in agricultural production. The latest study reveals the relationship between the efficiency of agricultural production of farms and the system of distribution of innovative technologies in the agro-industrial complex, which are widely used in developed countries. Looking ahead, it should be noted that in Kazakhstan, the need for such a system of development and dissemination of innovative knowledge and technology in the field of agriculture among entrepreneurs-farmers is very high, which should be met through the introduction of appropriate mechanisms and institutions, which will be recommended in the conclusion of the article.

In terms of the inevitably emerging in the EAEU market competition further improvement of the approaches to the solution of problems of innovative development of agro-industrial complex is one of the fundamental prerequisites of the modernized approach to change management of these large economic systems such as agriculture. Today, Kazakhstan's agribusiness companies increasingly have to rely on their own resources. However, many analysts and business representatives consider it impossible to maintain the profitability of existing agribusiness companies without significant state support for their operational and innovative activities (Mukhtarova, et al., 2017). Recently, there has been a general decline in investment potential in the agricultural sector, which, along with inflation, rising prices for all types of resources, including credit, and a decrease in the purchasing power of the population, probably negatively affected the innovative development of agricultural enterprises. In the course of the study, various aspects of the activities of Kazakhstani entrepreneurs in the field of agriculture were considered, including in the context of the situation of the development of the agricultural market within the framework of the EAEU and the WTO. The results of the study were summarized the respondents' views on topical issues of innovative development of agricultural complex of Kazakhstan, including, such as state support for innovation, financing and innovation processes, long-term and short-term plans of market participants, the prospects of entering the foreign market, through the introduction of innovative technologies.

Methods

The data obtained in this pilot study are General in nature and their analysis will not make any final conclusions on the situation related to the activities of agricultural companies in the conditions of priority of

innovation as one of the factors determining the overall situation of business development within the agro-industrial complex. The limited scope of the article does not allow us to present the results of the entire survey, and we will present the results of answers to only a part of the questions related to the development of innovative activities of entrepreneurs.

As part of this study, we set the task to find out why the agricultural sector is not attractive to scientists and innovators, although there are specific results of the development and implementation of innovative technologies in Kazakhstan. The modern Kazakhstan innovation agenda is primarily focused on the industrial sector, in particular, the manufacturing industry. Now one of the priorities is agriculture, because in Kazakhstan the productivity of agricultural production is one of the lowest – 5-10 times lower in comparison with developed countries. In Kazakhstan, there are very few scientific and innovative start-UPS working in the field of agriculture in General, including not only crop production and animal husbandry, but also subsequent areas of agricultural processing. Therefore, the purpose of this study is to determine the attitude and needs of agricultural producers in Kazakhstan in innovative technologies (Taubayev, Ulybyshev, 2015), to determine the directions of appropriate state support for these processes on the basis of a corresponding sociological survey.

In the period from 15.08.19 to 30.08.19, a sociological study was conducted to study the business and innovation activity of entrepreneurs in the agricultural sector. The study examined various aspects of the activities of agricultural companies, including in the context of the situation of the development of the agricultural market within the EAEU. Taking into account the practical goals and objectives of the study, as well as the possibility to use statistical data on respondents, the target sample model was applied. This type of sampling does not assume that the percentage of quotas in the General and sample populations corresponds to each other. It is allowed to distort the ratio proportions in order to get a legitimate number of respondents in the specified target groups. The criteria for determining the target groups were: the type of production within the agro-industrial complex and the size (volume) of production. The sample consisted of 163 respondents, representatives of agricultural enterprises of the Karaganda region.

The limited scope of the article does not allow us to provide answers to all the questions of the survey, and in the framework of our research, we would like to focus on certain groups of questions of the survey that directly relate to the innovative development of the industry.

Results

The first group of questions concerned the existing production and innovation potential of entrepreneurs for the survey period (Table 1). As we can see from the responses, among the surveyed entrepreneurs, the majority are focused on medium and small consumers, which immediately gives them a reference point mainly to the domestic market, in which they note very high competition (64%). They rate the existing innovation potential as low (51%) and sufficient (41%), although they rate competitors relatively higher than themselves, which is an additional factor of innovative development in the industry. However, when we survey the main forms and types of innovation that are being implemented, we see that the bulk of innovations in agribusiness enterprises are focused on expanding the product range (32.4%), organizational (30.2%) and marketing (24.5%) innovations, while much-needed technological innovations occupy only 21.6%. The high percentage of non – innovators-24.5% - is also alarming.

Table 1. Assessment of the production and innovation potential of entrepreneurs

Questions	Distribution of answers to a question
1	2
Basically, You work in the calculation of the...	a) large consumers – 10%; b) average consumers – 41%; c) small consumers – 49%.
Assess the level of competition in the domestic market	a) high-64%; b) average-30%; c) low-6%.
Evaluate the innovative potential of your organization	a) high – 8%; b) average (sufficient) - 41%; c) low-51%.
Evaluate the innovative potential of your competitors	a) high – 14%; b) average-52%; c) low – 44%.

1	2
What are the main forms and types of innovation you use in your business? (1-3 selections)	a) grocery (expanding the range of products...) – 32.4%; b) technological (new equipment, changes in technological processes...) – 21.6%; c) organizational (changes in the business model, new structural divisions, personnel...) - 30.2%; d) marketing (change of name, packaging, promotions...) – 24.5%; e) I can't answer-12.1%. f) not implemented in the last 3 years – 24.5%.
Evaluate your prospects for active implementation of innovative technologies	a) high – 18%. b) average – 27%. c) low – 41%. d) no prospects – 6%; e) the other 8%.
What changes in the market do you expect in 2020? (1-2 choices)	a) competition growth – 77.8%; b) decrease in demand for agricultural products – 23.8%; c) increase in demand for agricultural products-14.3%. d) weakening of competition – 7.9%; e) I can't answer-15.9%.
In your opinion, what are the prospects for your company's development in 2020-2022? (1-3 selections)	a) growth, expansion of production-9,5%; b) acquisition of competing companies – 6.3%; c) expansion of specialization-31.7%; d) expansion of coverage, access to other regions-47.6%; e) survival – 19.0%; f) franchising (conclusion of agreements on the lease of a trademark or commercial designation with foreign producers of agricultural products) – 3.2%; g) no prospects-0 h) difficult to answer-22.2%.
<i>Note - Compiled by the author</i>	

Only 18%, 27% on average, and 41% on average rate their prospects for further innovative development in the direction of introducing innovations highly, which generally indicates low prospects for innovative development of the industry. Although the respondents see the further development of the market for agricultural products with an increase in competition (77.8%) and a relative decrease in demand for agricultural products (23.8%), which generally acts as a factor in stimulating innovation processes in the industry. As for the directions of their development, the majority of entrepreneur's plan to go to other regions (47.6%) and expand their specialization (31.7%), which will also require innovative approaches.

The second group of questions is devoted to assessing the resources of innovative development and the impact of the Eurasian economic Union on the innovation potential of the surveyed entrepreneurs (Table 2). As we can see from the responses, only 18% of entrepreneurs plan to significantly increase production volumes, in particular by expanding production volumes, and to a greater extent by improving production efficiency (14.3%). To implement these measures, entrepreneurs rely on bank loans (11.1%) and on their own funds (14.3%).

Table 2. Assessment of the resources and impact of the EAEU on the innovative development of entrepreneurs

Questions	Distribution of answers to a question
1	2
Do you plan to significantly increase production at Your company in 2020-2022?	a) Yes-18%; b) No-60%; c) I can't answer-22%.
What resources do you plan to use to increase production at your company? (the number of selections is unlimited)	a) expansion (purchase of land, livestock, machinery, etc.) - 9.5%. b) modernization of production is 7.9%; c) acquisition of new companies/mergers – 3.2%; d) increase in production efficiency from existing assets-14.3%; e) other – 3.2%.

1	2
What financial resources do you plan to attract to expand production? (The number of selections is unlimited)	f) Bank loan – 11.1 V%; g) investors ' money – 3.2%; h) own funds-14.3%; i) funding under state programs – 6.3%.
Assess the impact of the sanctions policy against Russia on your business?	a) decreased competition in the market of agricultural products was 25.4%; b) increased demand for agricultural products-9.5%; c) difficulties in marketing products-65.1%; d) the opportunity to enter the foreign market-14.3%; e) profit growth-3.2%; f) no impact - 6.3%; g) other – 6.3%.
How do you assess the impact of the Eurasian economic Union on the innovative development of your business? (one choice)	a) positive – 23.8%; b) negative-17.5%; c) on average, there are both pros and cons – 38.1%; d) I find it difficult to answer – 20.6%.
What are the consequences of Kazakhstan's accession to the Eurasian economic Union on the innovative development of your business? (the number of selections is unlimited)	a) increased opportunities for export – 60,3%; b) decreased tax burden – 55,6%; c) decreased the cost of purchasing raw materials and equipment, transportation costs – 34,9%; d) having problems with sales of goods, due to their lack of competitiveness quality (lower quality products) – 11,1%; e) increased tax burden – 0; f) having problems with sales of goods, due to their price competitiveness (higher prices) – 61,9%; g) increased the chances and prospects of access to foreign markets – 23,8%; h) the other is 14.3%.
<i>Note - Compiled by the author</i>	

A separate block included issues related to Russia and the EEU, and 65.1% of respondents believe that the introduction of sanctions against Russia has led to difficulties in marketing products, and 25.4% believe that competition in the agricultural market has decreased. 23.8% and 38.1%, respectively, have a positive and average attitude to the EAEU, while only 17.5% have a negative attitude. In General, the work within the framework of the Eurasian economic Union as a positive factor of innovative development is noted by the majority of entrepreneurs, indicating that the opportunities for exporting products have increased (60.3%), the tax burden has decreased (55.6%), as well as the cost of purchasing raw materials and equipment, transport costs (34.9%), but there are also those who note that there are problems with the sale of goods due to their price non-competitiveness (61.9%). That is, in General, there is not a clear opinion about the EAEU among the respondents in terms of business functioning and innovative development (Taubayev et al., 2019).

The third group of questions is related to the assessment of problems that hinder innovative development, as well as forms and tools of state support for innovative development of entrepreneurs (Table 3). As can be seen from the responses, 71.4% of respondents point to high lending rates, weak legislative framework, 38.1% and weak state support for 25.4% of respondents as the main problems of innovative development of their business. 12.7% of entrepreneurs note that there are no problems with innovative development (Ulybyshev, Kenzhebekov, 2017). Among the respondents, 89% said that they need state support.

Table 3. Assessment of problems and tools of state support for innovative development of entrepreneurs

Questions	Distribution of answers to a question
1	2
What are the main problems that hinder the innovative development of Your business?	a) weak legislative base – 38.1%; b) high lending rates-71.4%; c) financial difficulties – 19.0%; d) high competition in the domestic market-47.6%; e) high competition in the foreign market-6.3%; f) low production efficiency-4.8%;

1	2
	g) low qualification of employees-9.5%; h) non-competitive products – 1.6%; i) no obstacles to business development-12.7%; j) weak state support-25.4%; k) I can't answer-6.3%; l) other-1.6%.
Do you need government support to activate innovation processes in Your organization?	a) Yes-46%; b) No-8%; c) Yes, partial – 43%; d) The other 3%.
What forms and tools of state support for innovation in the agricultural sector are acceptable to You?	a) innovation grants – 21.4%; b) soft loans-34.4%; c) budget subsidies and grants – 51.4%; d) professional development of employees-14.3%; e) grants for commercialization of innovations – 12.1%; f) centers of competence and dissemination of innovations-32.1%; g) promotion of cooperation with universities-21.4%; h) cooperation with development Institutions-21.4%; i) internships abroad-19.7%; j) I can't answer-3.6%; k) other – 1.3%.
<i>Note - Compiled by the author</i>	

Among the main state instruments, entrepreneurs allocate budget subsidies and grants-51.4% and soft loans-34.4%, while only 21.4% of respondents apply for innovation grants. This is due to the fact that, in General, entrepreneurs are used to relying either on irrevocable budget subsidies, or on clear bank loans, rather than on innovative grants, for which many do not even have knowledge about them. The share of specialized centers of competence and innovation dissemination is also relatively low (32.1%), although in world practice they are the coordinating organization of state support for innovative development of agribusiness.

Discussion

In general, the results of this sociological study indicate that there are significant problems in providing resources for innovative plans of entrepreneurs in the agricultural sector of Kazakhstan. In solving these problems, the entrepreneurs we interviewed focus primarily on credit resources and rely on state support. However, the existing national innovation system of Kazakhstan, the formation and development of which is devoted to a lot of research, considers the innovative infrastructure of the agro-industrial complex as an integral element of the development of agricultural science and the introduction of innovative high-tech technologies of domestic scientists.

Conclusion

Development of innovations and promotion of technological modernization of the agro-industrial complex of Kazakhstan should be aimed at sustainable development of agro-industrial enterprises through:

- orientation of applied science to the tasks of agricultural modernization, creation of an effective system for generating and using innovations in the rural economy;
- formation and development of a management system for innovative and technological development, including a system of technological forecasting and planning, development and implementation of programs for innovative and technological development of the agro-industrial complex of Kazakhstan;
- development of the system of assistance to technological modernization of agriculture of the Republic of Kazakhstan, including: technological audit, transfer of foreign technologies, promotion of the introduction and dissemination of technologies, commercialization of technologies;
- as part of spreading innovative knowledge among farms, a network of high-tech demonstration sites, model educational farms, joint ventures, and start-ups should be created together with national and large foreign companies.

Thus, critical to the development of innovative activity in agrarian sector of Kazakhstan's economy should be the establishment and effective functioning of highly organized large-scale regional systems of

innovation, focused on implementing new technologies and best practices. The role of such systems of consulting support for farmers is very important in the implementation of feedback from production with science – the formation of proposals for further improvement of innovations, areas and subjects of research, etc.

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Қазақстанның агроөнеркәсіптік кешенінің инновациялық дамуының басым бағыттары

Аңдатпа

Мақсаты: Зерттеу мақсаты Қазақстанның ауыл шаруашылығы өндірушілерінің инновациялық технологияларға қатынасы мен қажеттілігін айқындау, тиісті әлеуметтік сауалнама негізінде осы үрдістерде тиісті мемлекеттік қолдау бағыттарын белгілеу.

Әдістері: Қазақстанның агроөнеркәсіптік кешені кәсіпкерлерінің инновациялық дамуының өзекті мәселелері бойынша, оның ішінде инновацияны мемлекеттік қолдау, қызмет пен инновациялық процестерді қаржыландыру, нарыққа қатысушылардың ұзақ мерзімді және қысқа мерзімді жоспарлары, инновациялық

технологияларды енгізу арқылы сыртқы нарыққа шығу перспективалары сияқты мәселелер бойынша пилотаждық әлеуметтік зерттеу әдістері пайдаланылды.

Нәтижелері: Осы пилотаждық зерттеу шеңберінде алынған деректер жалпы сипатқа ие және оларды талдау кезінде агроөнеркәсіптік кешен шеңберінде кәсіпкерлікті дамытудың жалпы жағдайын айқындайтын факторлардың бірі ретінде инновациялық қызметтің басымдығы жағдайында АӨК компанияларының қызметіне байланысты жағдай бойынша қандай да бір түпкілікті қорытынды жасалмайды. Осы зерттеу аясында біз Қазақстанда инновациялық технологияларды әзірлеу мен енгізудің нақты нәтижелері бар болғанымен, ауыл шаруашылығы саласының ғалымдар мен инноваторлар үшін неге тартымды еместігін анықтау міндетін қойдық.

Қорытынды: Инновацияларды дамыту және Қазақстанның АӨК-сін технологиялық жаңғыртуға жәрдемдесу агроөнеркәсіптік кәсіпорындарды орнықты дамытуға келесідей бағытталуы тиіс:

– қолданбалы ғылымды ауыл шаруашылығын жаңғырту міндеттеріне бағдарлау, ауыл экономикасында инновацияларды генерациялау мен пайдаланудың тиімді жүйесін құру;

– Қазақстанның АӨК инновациялық-технологиялық дамыту бағдарламаларын әзірлеу және іске асыруды, технологиялық болжау және жоспарлау жүйесін қамтитын инновациялық-технологиялық дамытуды басқару жүйесін қалыптастыру және дамыту;

Кілт сөздер: агроөнеркәсіптік кешен, инновациялық кәсіпкерлік, жаңа технологиялар, инновациялық білімді тарату, инновациялық менеджмент.

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Приоритетные направления инновационного развития агропромышленного комплекса Казахстана

Аннотация

Цель: Цель исследования — определить отношение и потребности сельхозпроизводителей Казахстана в инновационных технологиях, установить направления соответствующей государственной поддержки этих процессов на основе соответствующего социологического опроса.

Методы: Используются методы пилотажного социологического исследования по актуальным вопросам инновационного развития предпринимателей агропромышленного комплекса Казахстана, в том числе по таким вопросам, как государственная поддержка инноваций, финансирование деятельности и инновационных процессов, долгосрочные и краткосрочные планы участников рынка, перспективы выхода на внешний рынок через внедрение инновационных технологий.

Результаты: Полученные в рамках данного пилотажного исследования данные носят общий характер и при их анализе не будут сделаны какие-либо окончательные выводы по ситуации, связанной с деятельностью компаний АПК в условиях приоритета инновационной деятельности как одного из факторов, определяющих общую ситуацию развития предпринимательства в рамках агропромышленного комплекса. В данном исследовании нами была поставлена задача — выяснить, почему отрасль сельского хозяйства не привлекательна для ученых и инноваторов, хотя точечные результаты разработки и внедрения инновационных технологий в Казахстане имеются.

Выводы: Развитие инноваций и содействие технологической модернизации АПК Казахстана должны быть нацелены на устойчивое развитие агропромышленных предприятий через:

– ориентирование прикладной науки на задачи модернизации сельского хозяйства, создание эффективной системы генерации и использование инноваций в сельской экономике;

– формирование и развитие системы управления инновационно-технологическим развитием, включающей систему технологического прогнозирования и планирования, разработку и реализацию программ инновационно-технологического развития АПК Казахстана.

Ключевые слова: агропромышленный комплекс, инновационное предпринимательство, новые технологии, распространение инновационных знаний, инновационный менеджмент.

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Migration processes in Kazakhstan: Trends, specifics, factors

Abstract

Object: to identify the main trends in external and internal migration in Kazakhstan, to study the characteristics of its different flows, and to describe the economic and demographic factors affecting migration processes. Migration processes in the Republic of Kazakhstan

Methods: methods of system, dynamic and structural analysis, and methods of studying cause-and-effect relationships.

Results: We have identified trends in external and internal migration in Kazakhstan in the last decade; we have studied the characteristic features of migration flows in Kazakhstan and the factors affecting the migration activity of the population; we have addressed the issue of unregulated migration in Kazakhstan and described the risks associated with it, as well as the possibility of migration policies in addressing this issue.

Conclusions: In recent years, the negative balance of external migration has been growing; there is a net outflow from Kazakhstan. The intensity of ethnic repatriation of Kazakhs, which previously would block the flow of emigration, is now decreasing. Measures are needed to halt the outflow of migrants from Kazakhstan and to encourage immigration into Kazakhstan. In recent years, the state has been actively pursuing an internal migration policy: mechanism for registering migrants within the country has been strengthened, and a quota has been established for resettlement to the northern and north-eastern regions of Kazakhstan.

Keywords: migration, external migration, internal migration, unregulated migration, migration intensity, economic factors of migration, migration policy.

Introduction

The world's population mobility has been growing rapidly in recent years, and there is whole multitude of reasons for this. These include globalization, which has led to the fact that labor markets from local and domestic closed markets have become increasingly integrated into international labor markets with intensive external labor and educational migration. The expansion of the information space has also largely influenced the intensification of migration; with the development of communication tools and the spread of the global Internet, people can assess their own conditions and where they would like to go. Details on the availability of more attractive conditions in other countries motivate potential migrants to decide sooner about moving to other countries, or to other regions of the same country. In the era of digital technologies and global connectivity, young people are increasingly participating in global educational migration flows. And if earlier educational migration flows were more linked to urbanization processes when rural youth would seek to study in cities and would eventually stay there (return migration would turn into nonreturn one), in the modern world these flows are more complicated. Advanced young people from developing countries seek education in prestigious universities around the world, while in developed countries there is a "battle for brains" when countries with depopulation processes and an aging population seek to attract talented young people and highly qualified personnel from less developed countries. In turn, the countries that are donors of educational and labor migration, are starting to feel the impact of "brain drain" on prospects of demographic development and damage to the future economic development of the country (promising personnel are getting washed out, and the aging trends of the local population accelerate over time). In recent years, migration flows of forced migration have increased due to wars, local conflicts between population groups, and natural disasters forcing people to leave their cities and villages and become refugees.

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Kazakhstan is hardly a stranger to these trends as processes of both external and internal migration are actively developing in our country as well. In this paper, we shall review the dynamics of migration processes in Kazakhstan, try to identify the specifics of external and internal migration flows in our country, and describe the main factors affecting the dynamics of migration both in the country and abroad. Our contribution to the study of migration issues will consist in our own interpretation of the migration processes that have taken place in Kazakhstan in recent years, and in the analysis of factors stimulating or halting the growth of mobility of Kazakhstan citizens.

We assume that processes of external migration in Kazakhstan are influenced by the following: socio-economic conditions, internal motivation of people, ethno-cultural motives (motives of attachment to the historic homeland, a desire to preserve national identity, language environment). We also proceed from the hypothesis that in Kazakhstan, external migration processes occur as part of the ethnic repatriation of European ethnic groups from Kazakhstan and ethnic Kazakhs into Kazakhstan. In addition to nonreturn external migration, the flows of which are reflected in demographic statistics, the flows of return migration (especially educational and labor migration) are also of significant importance in the migration processes in our country. We need to take these flows into account, since they are associated with great risks, a "brain drain" and loss of the demographic dividend due to the transformation of return migration into nonreturn one.

Literature Review

The HSE University's own online magazine Demoscope Weekly publishes materials on migration processes in the post-Soviet space, including those in Kazakhstan. This magazine posts topics on all demographic processes (birth, mortality, migration, marriage, and divorce rates). In particular, there are articles by Kazakh scientists Y.Y.Sadovskaya (Sadovskaya, 2009) and A.N.Alekseyenko (Alekseyenko, 2008) who raise issues of immigration into Kazakhstan (Chinese migration, ethnic repatriation, internal migration, etc.).

Also, a number of publications and analytical materials on migration processes in the Central Asian region, including those in Kazakhstan, can be found on the home page of the Kazakhstan office of the International Organization for Migration (hereinafter referred to as IOM) at kazakhstan.iom.int. IOM experts consider issues of protection of migrants in vulnerable situations, youth migration, return migration, unregulated migration, and other topical issues in this area.

Sources of statistical data on migration in Kazakhstan include compilations, bulletins, and dynamic tables in the section "Demographic statistics" of the Committee on Statistics of the MNE RK at stat.gov.kz. Indicators of migration movement of the population are presented in the context of external and internal flows by countries, age categories, ethnic groups, and regions within Kazakhstan. Source of data on labor migration within the EAEU is the Eurasian Economic Commission's home page at eurasiancommission.org. Data on international educational migration (including Kazakhstan) is available on the UNESCO Institute for Statistics' home page at data.uis.unesco.org.

A whole multitude of scientists and analysts address the migration factors, but in general all of them can be grouped as follows:

1) Push and pull theory by Everett S. Lee (Lee, 1966), in which he highlights the push and pull factors of migration flows. He also emphasizes that the desire of a potential migrant to leave is influenced by the following unidirectional and multidirectional forces and motives (both strengthening or weakening): border crossings, the cost of housing in a new location, and others that may be surmountable obstacles for some migrants, and insurmountable for the other, negatively affecting their decision to leave.

2) Theories that consider the distance between the points of departure and arrival of migrants to be the main factor of migration. Its foundations were laid in 1885 by Ernst Georg Ravenstein (Ravenstein, 1885). He believed that migration flows mainly spread over short distances. Moreover, he stressed that the main motives for migration are economic. In support of this theory, George Kingsley Zipf (Zipf, 1949) has introduced the principle of least effort, or least resistance used by migrants when deciding where to go. He proposed a gravity model of migration. The intensity of the migration flow between two objects in the gravitational model will depend on the distance between them and some measure of their significance (magnitude). Population figures are usually taken as a measure of significance.

3) Theories that study the economic factors of migration. W.A. Lewis (Lewis, 1954) has made a significant contribution to development of this direction (in his dual-sector model of the economy he pays attention to the factors of moving from rural to urban); J. Harris and M. Todaro (Harris, Todaro, 1970) have studied effects of expected wages in urban and rural on migration from rural to urban based on the likelihood of getting a job in the city.

4) Theories that study migration as part of the globalization processes, Stephen Castles and Mark J. Miller (Castles, Miller, 1993) have considered migration flows between developed and developing countries in the light of issues of ethnic, labor migration and migration policies of countries, Saskia Sassen (Sassen, 1988) has shown the impact of foreign investment on external migration and the impact of international organizations on migration flows.

Methods

The object of the study is migration processes within Kazakhstan and with the participation of Kazakhstan – external emigration from our country and immigration to our country.

The research objectives are:

- study of trends in the development of external migration processes – flows from the country to the country within the framework of migration for permanent residence, ethnic, educational and labor migration, as well as trends in migration movement within the country (between regions of the country, from village to city);
- consideration of factors affecting the intensity of migration from / to the country and within the country, directly or indirectly determining the migration mood of the population in the country both in the countries of origin of migrants arriving in Kazakhstan and in the countries of departure of emigrants from Kazakhstan;
- identification of the role of migration policy in Kazakhstan in regulating migration processes in the country and development of proposals to strengthen its measures and increase the effectiveness of the impact tools used.

The sources of data about the research object are:

- data of the Committee on statistics of MNE of RK, from October 2020 the National statistics Bureau of the Agency for strategic planning and reforms of the Republic of Kazakhstan;
- data of the National Bank of the Republic of Kazakhstan on money transfers from / to the country;
- data of the Ministry of labor and social protection on labor migration to Kazakhstan;
- UNESCO database on educational migration between countries of the world;
- analytical data on the website of the International organization for migration (IOM);
- analytical materials on the website of the Eurasian economic Commission;
- monographs and articles by domestic and foreign authors devoted both to the analysis of migration flows in Kazakhstan and with the participation of Kazakhstan, and to the assessment of various factors affecting the migration activity of the population in Kazakhstan and countries that are donors or recipients of migration to and from our country.

When processing statistical and departmental data describing the quantitative parameters of migration flows in Kazakhstan, the methods of dynamic (time series analysis) and structural (assessment of the contribution of constituent elements) analysis were used. This allows us to study trends in the development of migration processes in our country and assess the impact of multidirectional migration flows on the overall demographic situation in the country and in its individual regions.

The identification of factors affecting the intensity of internal and external migration in Kazakhstan was based on the study of cause-and-effect relationships between various parameters of socio-economic development in the country and in its regions (income and standard of living, labor market indicators, living conditions, etc.) and the dynamics of migration movement in the country.

The analysis of migration policy in the country was carried out by studying the legal framework for regulating migration processes in the country and various policy documents (concepts, strategies and state programs) that contain a description of measures and tools for influencing migration movement in the country and in its regions.

Results

Migration mobility of Kazakhstan population has been increasing its potential over the years of independence. In the early 1990s, migration flows in the post-Soviet space have increased due to the expansion of ethnic repatriation in all countries. Destruction of the "Soviet man" phenomenon in the minds of people, who, according to the established ideology, would feel at home anywhere he would be ("vast Homeland") throughout unified country, pushed them to realize their national identity and their attitude to the concept of "historic homeland". In addition, the collapse of the Soviet Union has led to the destruction of economic ties and the production crisis in the former Soviet republics. The decline in incomes, the crisis of payments, and the rapid devaluation of the ruble have led to increased economic factors of migration, and the population began to seek a "better life" and "where to survive better." Together, these reasons have led to an increase in

the negative balance of migration to 406.7 thousand in 1994 (the outflow "peak"). By the early 2000s, the net outflow of population from Kazakhstan began to decline, and in 2004, the balance of external migration started showing positive values. A positive balance of migration would remain until 2011, that is, the flow of migrants entering the country would exceed the outflow. In 2012—2013, there was a slightly negative balance. Since 2014, the negative balance of external migration has been gradually increasing from 12,000 net outflows to 29,000 (Figure 1).

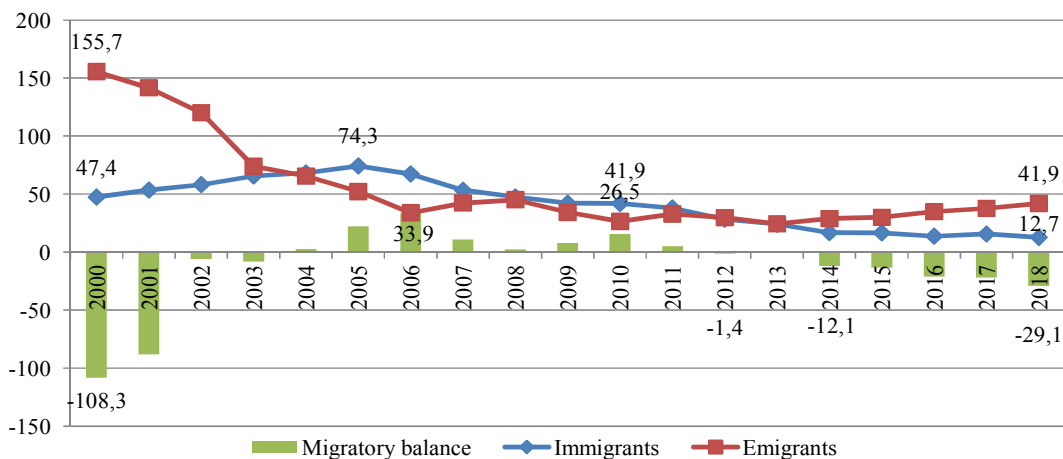


Figure 1. External migration trends in 2000—2018, thousands of people

Note: Compiled by the authors

The flow of foreign emigration would decrease significantly in the period of 2000—2006 from 155.7 thousand to 33 thousand people. Further, until 2013, the flow of emigrants from Kazakhstan would decrease to 24 thousand per year (with fluctuations up to 45 thousand in 2008). Until 2018, again, there was a gradual increase in the flow of emigration up to 43 thousand people.

The largest share of emigrants in the total flow of external emigration is accounted for by Russians as their share in the outgoing migrants was 70.6% in 2010 and 72.5% in 2019. Germans and Ukrainians are next in terms of their share of outflows (Table 1). Most of them leave Kazakhstan for the Russian Federation (RF). This is most likely due to relatively higher wage levels and the pension size and benefits than in our country: about 1.5 times the cost of living and the minimum wage. Also attracting factors in the Russian Federation are measures supporting repatriation for emigrants from the CIS countries under the Compatriots state program.

Table 1. Ethnic structure of external migrants in 2019

	External Migration			In % to total	
	Migratory balance	Arrivals	Departures	Arrivals	Departures
Total	-32 970	12 255	45 225		
Russians	-30 128	2 645	32 773	21,6%	72,5%
Kazakhs	4 860	7 033	2 173	57,4%	4,8%
Germans	-2 958	191	3 149	1,6%	7,0%
Ukrainians	-2 740	248	2 988	2,0%	6,6%
Tatars	-914	144	1 058	1,2%	2,3%
Poles	-632	22	654	0,2%	1,4%
Belarusians	-508	49	557	0,4%	1,2%
Uzbek	44	286	242	2,3%	0,5%
Koreans	-76	162	238	1,3%	0,5%
Azerbaijanis	133	238	105	1,9%	0,2%
Karakalpaks	285	301	16	2,5%	0,0%

Note: Compiled by the authors

The flow of **external immigration** to Kazakhstan would grow from 47.4 in 2000 to 74.8 in 2005. Since 2006, there has been a constant decrease in the flow of external migrants to Kazakhstan to 42 thousand people by 2010 and to 12.7 thousand people by 2018. External immigration to Kazakhstan is closely linked to the ethnic repatriation of Kazakhs living in diasporas (irredentas) in the People's Republic of China, Mongolia, Uzbekistan, Turkmenistan, and Kyrgyzstan, as well as in the Russian Federation. From 1991 to January 1, 2020, 313,256 families or 1,057,280 ethnic Kazakhs have returned to their historical homeland and received the status of oralmans.

According to the Ministry of Labor and Social Protection of the Population, in 2019, 17,661 ethnic Kazakhs or 9,993 families have received status of oralmans. The majority of oralmans arrived from China: 41.5% (7,326 people), Uzbekistan: 40.1% (7,074 people), Turkmenistan: 6.5% (1,152 people), Mongolia: 6.2% (1,095 people), Russia: 1.8% (313 people), and 3.9% (701 people) from other countries.

The largest number of oralmans (38%) have settled in Almaty region, 14% in Mangistau region, 7% in Shymkent and 6% in Nur-Sultan%. Repatriates chose these regions for resettlement because of natural and climatic conditions similar to the countries of their origin (Almaty region, Shymkent), because of the desire to reunite with relatives who previously moved to these regions to facilitate the adaptation process, and because of better conditions for living, for employment, for teaching children in colleges and universities (Nur-Sultan).

Currently, measures to support repatriate resettlement to the Northern (Kostanay, North Kazakhstan, Akmola regions) and North-Eastern regions (Pavlodar and East Kazakhstan regions) are being implemented within the framework of the state program Enbek. According to the regional quota for accepting oralmans with a relocation compensation – a one-time payment of 35 MCI to each family member (84.2 thousand tenge in 2019); from 15 to 30 MCI (from 36.1 to 72.2 thousand tenge in 2019) per family to cover the costs of renting (tenancy) housing and paying monthly utility bills for 12 consecutive months. However, support covers only 11.5% of oralmans, and the majority of ethnic Kazakhs come regardless of whether they receive material support from the state, i.e. they have a different incentive for moving to their historic homeland (push factors in the country of origin, attracting factors in Kazakhstan).

To offset the negative balance of external migration in our country, we need to strengthen measures to encourage ethnic repatriation. Various NGOs dealing with the issues of adaptation of immigrants in Kazakhstan and support of foreign Kazakh diasporas propose the following measures: to expand the list of regions covered by the regional quota for receiving oralmans, to expand the list of benefits for potential repatriates, to increase the availability of support measures for them through activating measures to promote development of entrepreneurial initiatives of immigrants, their training and successful employment.

According to the well-known Kazakh expert A.N. Alekseyenko, "the main role of the repatriation of ethnic Kazakhs is to restore historical justice, eliminate disproportions of ethnodemographic development, and generally stabilize the demographic situation in Kazakhstan. But the more intensively immigration would develop, the more urgent issues of the "quality" of those arriving and their integration into the Kazakh society would become."

In 2019, of the working-age oralmans (who made up 62.7% of all oralmans), 13.6% had higher education, 25.2% had specialized secondary education, 46.7% had general secondary education, and 14.5% had no education at all. In other words, there is a very high share of low-skilled labor among potential workers among the repatriates (more than half do not have a professional education). This leads to the fact that their adaptation is complicated by the complexity of their employment in regions with vacancies and a shortage of staff. Therefore, majority of repatriates seek to settle in rural areas to engage in animal husbandry (more often) or crop production (less often), and other forms of self-employment that do not require skilled labor (private transportation, small-scale trade, handymen). Such employment does not provide a stable income and makes it difficult for migrants to adapt to Kazakhstan's society. We need effective measures for professional retraining of repatriates in popular professions and improving their skills, developing useful skills for their self-development (business skills, computer literacy, language courses).

External migration in Kazakhstan has led to a change in the ethnic structure of the population:

- The number of European ethnic groups (Russians, Ukrainians, Poles, Belarusians) is decreasing due to intensive emigration and population aging processes, which leads to a decrease in their emigration potential in the future;

- Titular nation's share has increased from 53.2% in 1999 to 63.1% in 2009 and then to 68% in 2019. This has been positively affected by both repatriation of ethnic Kazakhs and relatively high birth rate among Kazakhs.

Factors for ethnic migration from Kazakhstan and to Kazakhstan are as follows:

– An active immigration policy in the countries where Kazakhstanis leave, which implies creation of preferential conditions for migrants ("lifting" allowances, benefits for purchasing housing, employment conditions, etc.). That is an attractive factor;

– Strengthening the position of Kazakh as the state language, increasing pressure on ethnic groups from representatives of the titular nation to study and use Kazakh everywhere (in documentation, education, the media, social networks, signage, etc.). That is a push factor for the Russian-speaking population;

– With the deterioration of socio-economic conditions, tensions in inter-ethnic relations increase, and manifestations of inter-ethnic discord increase in the southern regions of the country leading to local conflicts (climaxing in Kordai events in February 2020). That is a push factor;

– At the meso-level, small ethnic groups leave for their historic homeland to preserve their national identity (their language, culture, and traditions), in addition, they refrain from inter-ethnic marriages and maintain a connection with their historic homeland.

The above trends and factors of external migration present non-return migration of the population from/to Kazakhstan (for permanent residence). However, the scale of external migration processes in Kazakhstan is much broader and covers the flows of educational and labor migration.

Educational migration from Kazakhstan is growing dynamically. So according to UNESCO, in 2012, the number of students studying abroad was 42.5 thousand people. By 2016, this figure has increased to 90.2 thousand people, but in 2017, it decreased to 84.7 thousand students. According to UNESCO (Table 2), most Kazakhstan students go to study in Russia (about 65.2 thousand in 2017, or 77%). There are flows of Kazakh students who chose Kyrgyzstan as their place of study (over 4 thousand people until 2016, and 3.3 thousand in 2017), the Czech Republic, the USA, the UK (in the range of 1000-2000 people each), followed by Germany, Malaysia, Poland, the United Arab Emirates, Canada, and France (300-750 people each).

The UNESCO database does not contain data on foreign students studying in educational institutions of the People's Republic of China (PRC). Therefore, the number of Kazakh citizens studying in China should be added to the UNESCO-specified flows of students from Kazakhstan.

Y. Sadovskaya's monograph offers the following figures: As part of the development of contacts between the two countries, an exchange of students began in the 2003—2004 academic year (20 students from universities in Kazakhstan). In 2006, about 1,200 Kazakh students were studying in China, 7874 people in 2010, 8287 people in 2011 (according to the Chinese Embassy in Kazakhstan). Students would attend high schools both under state agreements on student exchange, and within the framework of the SCO University, and the Bolashak program (during the period of 2004—2011, it helped 344 students get their education in China). In addition, a large influx of students came funded privately, at the expense of enterprises sending them for retraining and internships, and at the expense of their own families. First year of study in China is mostly devoted to learning Chinese. After the language courses, students take the HSK exam to certify their proficiency in Chinese and access further education in the Chinese higher education system.

Table 2. Kazakhstan students studying worldwide according to UNESCO

Countries	Kazakhstan students in the listed countries (people)						% of the total number	
	2013	2014	2015	2016	2017	2018	2016	2017
Russian Federation	..	49252	59295	69895	65237	..	77,48%	77,04%
Kyrgyzstan	4357	4535	4828	5318	4907	3290	5,90%	5,79%
Turkey	10	1306	1799	1986	2015	..	2,20%	2,38%
USA	1884	1913	2006	1963	1707	..	2,18%	2,02%
Great Britain	1725	1596	1576	1545	1436	..	1,71%	1,70%
Czech Republic	1174	1376	1446	1515	1648	..	1,68%	1,95%
Malaysia	..	1701	1443	1369	1002	808	1,52%	1,18%
Poland	401	519	541	753	649	..	0,83%	0,77%
Germany	695	701	738	743	750	..	0,82%	0,89%
South Korea	211	251	375	546	659	..	0,61%	0,78%
Canada	357	429	444	480	483	..	0,53%	0,57%
UAE	361	377	455	451	0,50%	..
France	346	392	398	428	470	..	0,47%	0,56%

Note: Compiled by the authors

Back in January 2017, the Public Opinion Research Institute and the Confucius Institute at the L.N. Gumilyov ENU (Astana) jointly reported on the study of educational migration from Kazakhstan to China. The title of the work is "Educational Migration from the Republic of Kazakhstan to the People's Republic of China as One of the Aspects of Strategic Cooperation Between Countries." This paper examines in detail both quantitative and qualitative characteristics of the process of obtaining higher education by Kazakh students in China. The authors have interviewed more than 400 Kazakhstani students from 14 cities in China. Among the respondents, 64.6% were self-funded students, the share of students receiving China's educational grants was 32.7%, and 2.7% received Kazakhstan grants.

Further, the report shows that for Kazakhstan today, China ranks second after Russia in the list of countries most popular for educational migration. Moreover, every year Chinese education is becoming more and more popular. If in 2007 there were about 3000 Kazakhstani students studying in China, as of February 2016, their number increased almost four times, amounting to 11,764.

Educational migration from Kazakhstan may turn into a non-returnable form and there are risks of students studying abroad to staying permanently. This can also be facilitated by a higher pay level in the countries of study after graduation, the absence of barriers as some countries are ready to host talented and promising young people and offer them preferential conditions for obtaining permanent employment visas, a simplified citizenship procedure, and other advantages. The following factors can serve as factors of educational emigration of young people from Kazakhstan:

- Residents of the border regions of Kazakhstan go to Russia and Kyrgyzstan to enroll in universities and colleges in line with historical tradition (since the USSR), and due to the proximity (faster and easier travel than that with Kazakhstan educational centers) and a relative cheapness (tuition fees are comparable or cheaper than in Kazakhstan, travel, accommodation and food costs are relatively low or comparable in size to those in Kazakhstan). All the while, our countries being in the Eurasian Union facilitates the recognition of diplomas and certificates of partner countries on their territories (attracting factors);

- China has a policy of "soft power" for its neighbors, so it is relatively easy for Kazakh applicants to enter educational institutions in China. In addition, China allocates education grants to students from Kazakhstan (including representatives of the Dungan diaspora in Kazakhstan). That is an attractive factor;

- Introduction of trilingualism (Kazakh, Russian, English) in Kazakhstan (especially in schools for gifted children, and international schools) increases the potential of Kazakhstani applicants for admission to foreign universities;

- With the digitalization development, many people gain access to information on foreign education, rules of admission to foreign universities and colleges, intermediary companies helping to enter universities in Poland, the Czech Republic, Germany, Malaysia and other countries, study tours and training at preparatory courses and language courses in various countries;

- Development of the student academic mobility system, which also allows Kazakh students to study in other countries and consider the possibility of continuing their studies in other countries (e.g. getting a second education, or entering a Master's or Doctoral program). That is a push factor;

- Experience of the presidential program Bolashak showed Kazakh youth the opportunities of foreign education, the prestige of worldwide university graduation and the advantages of employment for worldwide graduates;

- A negative assessment of the quality of education in domestic educational institutions by some graduates of Kazakhstan's schools, colleges and universities. That is a push factor.

Educational migration flows to Kazakhstan are mostly related to the training of ethnic Kazakhs living abroad in educational institutions of our country in support of their subsequent repatriation and adaptation. Size of the admission quota for admission to study in educational institutions implementing educational programs of technical and professional, post-secondary and higher education for persons of Kazakh nationality who are not citizens of the Republic of Kazakhstan is set at 2 percent of the approved state educational order.

People migrate for labor from Kazakhstan mostly to the Russian Federation. According to the EAEC, in 2019, 136.2 thousand citizens of Kazakhstan entered Russia for labor, and over the past three years, the annual increase has been more than 20% per year (Figure 2). Over five years, the annual flow of migrants has increased almost 2 times (1.94 times).

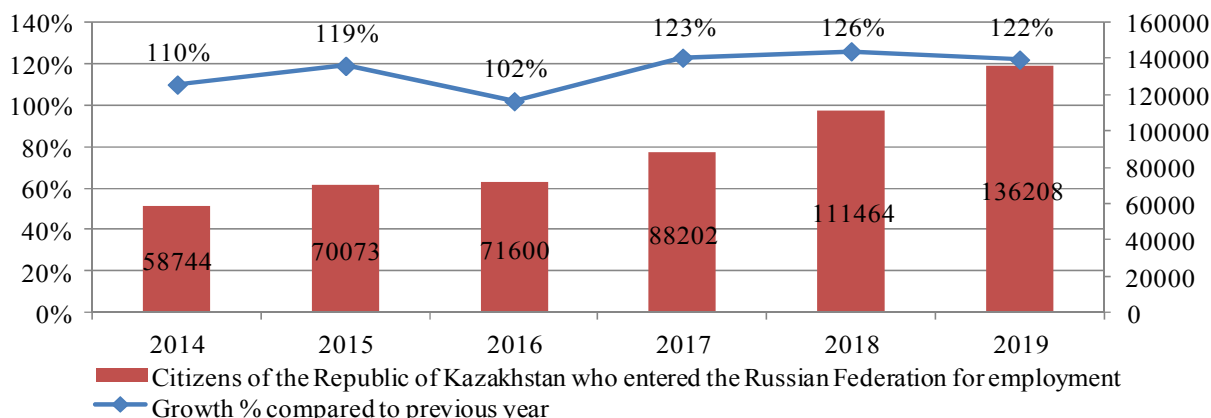


Figure 2: Labor migration from Kazakhstan to Russia in 2014–2019

Note: Compiled by the authors

Trends of money transfers from Russia to Kazakhstan in 2015—2019 (Figure 3) shows that in 2017, money transfers have increased sharply by more than three times, and this may be due to the increase in the number of labor migrants from Kazakhstan to Russia. From 2017 to 2019, money transfers decreased, but this may be due to the fact that in these years, online card to card transfers (i.e. not through a money transfer system) were developing, which do not record country to country transfers. For example, online transfers between Kaspi Gold cardholders.

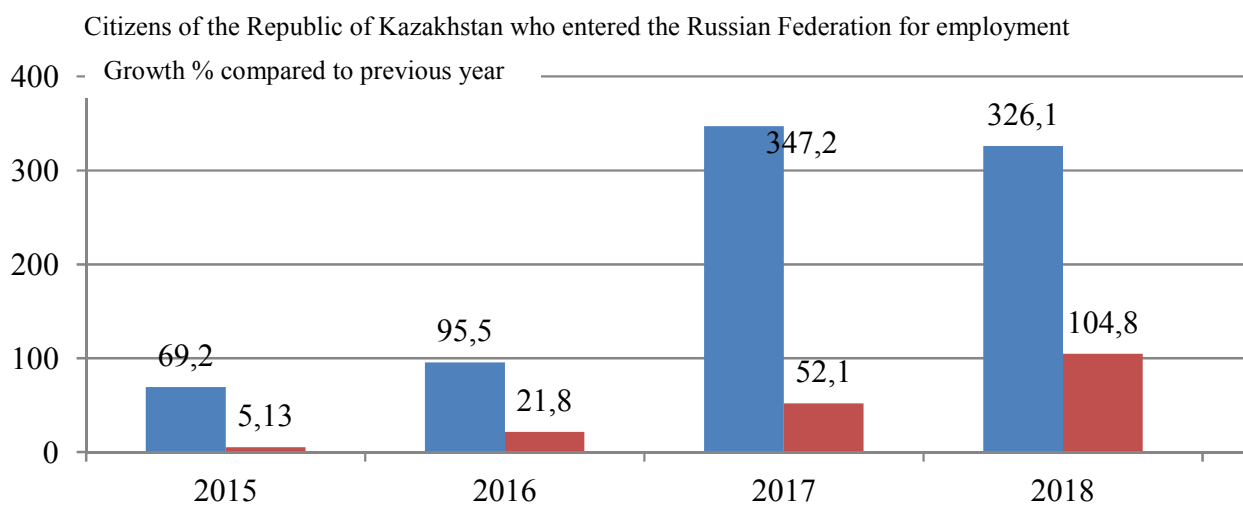


Figure 3. Money transfers in 2015—2019 from Russian Federation and South Korea to Kazakhstan (million USD)

Note: Compiled by the authors

Labor emigration from Kazakhstan has also been active in recent years to the Republic of Korea (South Korea), so if in 2015 money transfers from this country amounted to 5.13 million USD, by 2019 they have grown to 112.8 million USD. Transfers from these two countries accounted for 63-72% of the total amount of personal transfers from worldwide to Kazakhstan in the last three years. Moreover, some of the Kazakh migrant workers in South Korea would work illegally. For example, at the beginning of 2019, there were 12 thousand illegal workers from Kazakhstan in this country, then the authorities decided to provide them with a "green corridor," an opportunity to leave the country no penalties applied, and by the fall of 2019, their number was reduced to 9 thousand people.

Unregulated flows of labor migration to European countries exist as well. For example, at the end of September 2019, 59 semi-legal Kazakhstan migrants who had entered the country for seasonal work were identified in Norway and were deported back.

The main factors of labor migration from Kazakhstan include a significant difference in wage levels in Kazakhstan and in the countries where labor migrants go, and a "push factor:" difficulties finding a permanent and well-paid job in the region of exodus.

Labor immigration to Kazakhstan from other countries can also be divided into regulated (legal) and unregulated ones. The first one includes the following flows: 1) foreign workforce (FW) with LEA permits; 2) migrants working for individuals under migration police permits; 3) foreign workers who independently obtain work permits in the Republic of Kazakhstan based on certificates for the list of popular professions in the Republic of Kazakhstan; and 4) citizens of the EAEU countries who freely move around the participating countries and have the right to seek employment without permits.

Unregulated migration is represented by the following: 1) foreigners who have entered Kazakhstan legally, but engaged in informal employment and business activity in the RK; and 2) foreign citizens illegally staying in the RK who are also illegally employed or engaged in entrepreneurial activities without official registration and proper legal protection.

Kazakhstan registers labor migrants mainly just by the flow of foreign workforce (FW) attracted by enterprises with the permission of local executive authorities. For example, according to the database of the Ministry of Labor and Social Protection of the Population, the peak of labor migration under LEA permits occurred in 2007 and 2008, when 58.8 and 54.2 thousand foreign citizens would work under such permits, respectively.

Then, until 2012, the number of foreign employees attracted with LEA permits would reduce to 24 thousand people. Then, until 2015—2016, their number would once again increase to 36-38 thousand people. In 2017, 27.7 thousand permits were issued. As of April 1st, 2020, 19,952 foreign citizens were working in Kazakhstan under LEA permits to attract WF.

According to Y. Sadovskaya, "In the mid-2000s, more than a million people would come to Kazakhstan as labor migrants annually, which, according to estimates, accounted for 10 to 12 percent of the country's gross domestic product (GDP)." Here, the expert's assessment also includes the volume of unregulated labor migration that is not recorded in the state body and LEA databases.

In 2016, the Commission on Human Rights under the President of the Republic of Kazakhstan issued the Bulletin "Migrant Workers in Kazakhstan: No Status, No Rights," which indicates that the situation of Uzbekistan and Tajikistan workers in Kazakhstan is particularly vulnerable since the vast majority of them do not have their status regulated. Often, they do not have the right to work or a residence permit. As temporary migrants, they depend on their job and employer, while having limited access to social services provided to permanent residents. Working on construction sites lacking safety precautions, and as domestic workers, who are particularly vulnerable to abuse due to their isolated state, they often become victims of exploitation, forced labor or human trafficking. The situation is easier for migrants from Kyrgyzstan who can freely work in the Republic of Kazakhstan. According to EAEC estimates, 5.5 thousand Kyrgyzstanis would work in Kazakhstan in 2018, and 5.8 thousand in 2019.

Factors of labor migration from the country (push factors) are as follows:

- Higher wages in countries accepting migrant workers (in the Russian Federation and South Korea). For example, even the minimum wage in the Russian Federation is more than 1.5 times higher than in Kazakhstan (\$157 versus \$98 at the current exchange rate);

- Jobs deficit in labor-surplus regions (southern, south-eastern and western regions) and in some depressed territories (rural areas and single-industry towns).

If the intensity of external migration has generally decreased in recent years, internal migration of the population has become more active. If in the early 2000s the flow of internal migration was at the level of 300 thousand people per year, by 2017—2018, these flows have grown to 900 thousand people per year (Figure 4). According to statistics, a sharp increase in internal migration has occurred in these years due to the strengthening of measures for temporary registration of citizens in 2016—2017, which allowed the increase in the number of citizens registered at the place of residence. Control over the registration of citizens (legalization) has been strengthened. On December 22nd, 2016, the Law "On amendments and supplements to certain legislative acts of the Republic of Kazakhstan on countering extremism and terrorism" came into force. One of the norms this document has introduced was mandatory registration of Kazakhstan citizens at the place of their temporary stay. Sanctions have been introduced not only for citizens who do not live at the place of registration or do not have one, but also for owners of housing where unregistered citizens live. At the same time, procedures for registering citizens have been simplified. During the legalization campaign in 2016, 1 million 422 thousand citizens registered, and after the introduction of the law with stricter measures

in only 9 months of 2017, 2 million 461 thousand people registered, of which 988 thousand were temporarily registered.

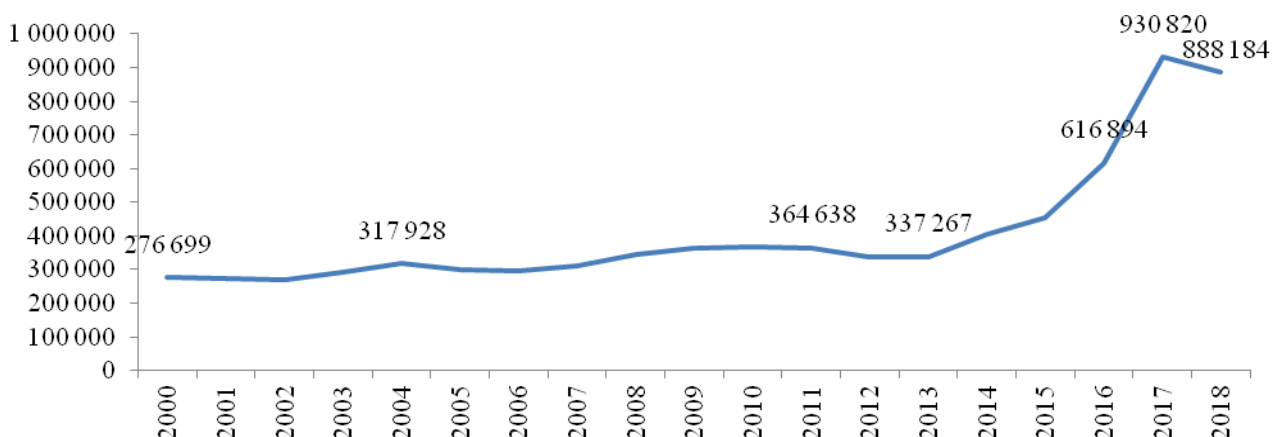


Figure 4. Internal migration flows in Kazakhstan in 2000—2018, people

Note: Compiled by the authors

In other words, these measures have made it possible to bring unregistered internal migrants out of the shadows, but in reality, many of them came earlier and have been living for some time unregistered. Accordingly, the number of internal migrants was previously underestimated, and after the measures taken to register the number of migrants increased not only due to the real growth of internal migrant flows over the current period, but also due to the legalization of the status of previously arrived persons. But in general, according to statistical indicators, internal migration has gained momentum in recent years and in 2018, 888 thousand citizens were registered in its flows, which is about three times more than at the beginning of the period under review.

In general, the growth of internal migration flows is associated with the development of urbanization (relocation of rural residents to cities), and the transfer of the capital from Almaty to Astana (Nur-Sultan), the intensive development of cities of national significance, and the growth of their attractiveness for internal migrants also played an important role. They have relatively high pay, better conditions for employment and entrepreneurial initiatives, and good quality of life indicators due to developed infrastructure, which makes these cities a center of attraction for internal migration. Moreover, internal migration is of a step-by-step nature. Flows from regions, especially from large cities, to cities of national significance, from small cities to large cities, and from villages to cities (educational and labor migration with subsequent transformation into non-returnable migration).

"The main reason for the transfer of the capital is the desire to achieve a regional ethno-demographic balance, encourage migration from labor-surplus southern regions to industrially developed cities in the north, and involve Kazakh population in industrial and agricultural production in Central and Northern Kazakhstan," says migration expert Yelena Sadovskaya.

Factors that attract people to cities from villages, from small towns to larger cities are as follows: pay level difference, a higher living standard (more comfortable housing conditions, leisure activities, developed infrastructure and communications), better education conditions (colleges, universities, equipment with educational materials), a higher level of education in urban schools (staffing of subject teachers, in-depth study of subjects, availability of schools for gifted children, etc.). It is also an important factor that cities have better conditions for employment than rural areas (where self-employment and the informal sector are more common). Demographic factors also play an important role in interregional migration. Thus, the main donors of internal migrants are regions with a rapidly growing population, mainly with agricultural specialization. Labor markets in such regions cannot "absorb" the excess supply of labor. Accordingly, some people who cannot find jobs in such labor-surplus regions tend to go to large cities where there is an unsatisfied demand for labor in service and industrial production sectors. In addition, young people from such regions tend to go to study in large cities to increase their competitiveness and in the future get a "good" job (with a permanent, stable income and social security, in the formal sector of the economy).

Discussions

This is an overview paper presenting the trends of migration processes in modern Kazakhstan based on statistical data mainly focusing on the analysis of external migration flows, including flows of permanent migration (permanent residence in another country), educational and labor migration. We have also discussed the issues of internal migration in Kazakhstan. For external migration, we have emphasized high importance of an ethnic component of the determinants of migration activity: of those leaving Kazakhstan mostly are representatives of European ethnic groups, while arriving are ethnic repatriates, Kazakhs from neighboring countries (Uzbekistan, China, Mongolia, and the Russian Federation).

The paper also presents the factors both pulling people in Kazakhstan (and other countries) and pushing them out of Kazakhstan (and other countries). These are economic factors, such as differences in income levels, quality of life, employment conditions, and the state of labor markets. Demographic factors play an important role, e.g. the aging of the population in some countries/regions leads to an active policy of attracting migrants from other countries. On the contrary, high natural growth in some countries leads to excessive pressure on labor markets, resources, and social infrastructure, and "pushes" migrants out of the countries/regions of origin. These factors are more associated with the macro-level as at the micro level, a greater role for spatial mobility are both individual preferences and expectations of potential migrants, their tendency to change places and adaptability to environmental changes and family values, and the capacity of families to support the decisions of migration of its members (material and moral support), the readiness of the family to hardship and cost of moving and adapting in a new place. The migration policy pursued by the state in regulating foreign immigration in Kazakhstan (the policy of supporting ethnic repatriation and working with ethnic Kazakh diasporas abroad) and in internal migration (the quota of internal migration and resettlement under "Enbek" – the state program for supporting productive employment and mass entrepreneurship) is also of some importance. Indirect influence is provided by regional development policies (in terms of equalizing regional differences, in terms of planning population settlement), infrastructure development, policies to support SMEs, and sectoral development. Language, inter-ethnic relations measures within the country, and measures to stabilize the socio-economic situation in the country play an important role in regulating emigration activity. The policy of regulating migration in the countries emigrants leave for is also important, that is, how much does it favor migrants from Kazakhstan: how much have barriers to entry and adaptation of migrants in the country been removed? What conditions have been created for living, employment, educational and medical services? What environment is created for the successful integration of migrants in the host society?

Conclusions

The peak of external migration activity was passed at the turn of the late 1990s-early 2000s, then until 2012 it would decrease. In recent years, since 2013, the negative balance of external migration has been growing back again, which indicates a steady excess of the number of people leaving Kazakhstan over those arriving. External non-return migration from/to Kazakhstan is ethnically expressed as follows: the leaving is mostly population of European ethnic groups, while ethnic Kazakhs mostly arrive. In recent years, educational and labor migration from Kazakhstan to other countries has become more active. The geography of countries where applicants from Kazakhstan go to study is expanding. Labor immigration is dominated by the flow to the Russian Federation, which is primarily due to relatively favorable adaptation conditions (there is no language barrier, similar production conditions and forms of labor organization, a relatively supportive population – a common USSR history). Also, recently, labor migration from Kazakhstan has been actively moving to South Korea.

In recent years, the following push/pull factors have been active:

1) Social factors: The desire to return to their historic homeland, reunite with their families, get away from the manifestations of everyday nationalism, and the language situation (increasing the scope of the state language);

2) Economic factors: different conditions of employment and support for entrepreneurship; the difference in the pay levels and social benefits, pensions in Kazakhstan and in the countries where emigrants leave for (mainly Russia, Germany, USA), and where immigrants come from (Uzbekistan, Kyrgyzstan);

3) Political factors: The difference in the population mentality, the perception of freedom of speech, policy in the inter-ethnic sphere and in the policy regarding national minorities (China), and language policy;

4) Demographic factors: threats of depopulation and active processes of population aging in some countries/regions (recipients of migration), on the other hand, rapid population growth due to the relatively high birth rate and low mortality rate in other countries/regions (migration donors).

Currently, quarantine measures can make their own adjustments to the migration activity of citizens of Kazakhstan in the context of the coronavirus pandemic, since entry/exit to and from countries is restricted to avoid the spread of the virus. This greatly restricts the flow of tourists between countries, reduces external migration flows, changes the plans of potential migrants, and makes adjustments to the migration timing, routes, and estimates of the material and non-material costs.

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Қазақстандағы көші-қон процестері: үрдістер, ерекшеліктер, факторлар

Аңдатпа

Мақсаты: Қазақстандағы сыртқы және ішкі көші-қонның негізгі үрдістерін анықтау, оның әртүрлі ағындарына тән ерекшеліктерді зерттеу, сондай-ақ көші-қон процестеріне әсер ететін экономикалық және демографиялық факторларды сипаттау. Қазақстан Республикасындағы көші-қон процестері.

Әдісі: Жүйелік, динамикалық және құрылымдық талдау, себеп-салдарлық байланыстарды зерттеу әдістері.

Қорытынды: Соңғы онжылдықтардағы Қазақстандағы сыртқы және ішкі көші-қон серпініндегі үрдістер анықталды; Қазақстандағы көші-қон ағындарының сипатты белгілері зерттелді және халықтың көші-қон белсенділігіне әсер ететін факторлар зерттелді; Қазақстандағы реттелмейтін көші-қон проблемасы қаралды және онымен байланысты тәуекелдер, сондай-ақ осы проблеманы шешудегі көші-қон саясатының мүмкіндіктері сипатталды.

Тұжырымдама: Кейінгі жылдары сыртқы көші-қонның теріс сальдосы өсуде — Қазақстаннан таза ағым жүріп жатыр. Бұрын эмиграция ағынын жапқан қазақтардың этникалық репатриациясының қарқындылығы төмендеуде. Қазақстаннан көшіп-қонушылардың кетуін тежеу және Қазақстанға көшіп келуді ынталандыру жөнінде шаралар қажет. Соңғы жылдары көші-қон саясаты ішкі көші-қон саласында белсенді жүргізілді: көшіп-қонушыларды ел ішінде тіркеу тетігі күшейтілді, Қазақстанның солтүстік және солтүстік-шығыс өңірлеріне қоныс аудару бойынша квота жұмыс істеуде.

Кілт сөздер: Көші-қон, сыртқы көші-қон, ішкі көші-қон, реттелмейтін көші-қон, көші-қон қарқындылығы, көші-қонның экономикалық факторлары, көші-қон саясаты.

С.Т. Мусина, Ж.С. Хусаинова, Е.А. Вечкинзова

Миграционные процессы в Казахстане: тенденции, специфика, факторы

Аннотация

Цель: Выявить основные тенденции во внешней и внутренней миграции в Казахстане, изучить характерные для ее разных потоков особенности, а также описать экономические и демографические факторы, влияющие на миграционные процессы в Республике Казахстан.

Методы: Методы системного, динамического и структурного анализа, изучения причинно-следственных связей.

Результаты: Выявлены тенденции в динамике внешней и внутренней миграции в Казахстане в последние десятилетия; исследованы характерные черты миграционных потоков в Казахстане и изучены факторы, влияющие на миграционную активность населения; рассмотрена проблема нерегулируемой миграции в Казах-

стане и описаны риски, связанные с ней, а также возможности миграционной политики в решении этой проблемы.

Выводы: В последние годы нарастает отрицательное сальдо внешней миграции – идет чистый отток из Казахстана. Снижается интенсивность этнической репатриации казахов, которая ранее закрывала поток эмиграции. Необходимы меры по сдерживанию оттока мигрантов из Казахстана и по стимулированию иммиграции в Казахстан. В последние годы миграционная политика активно велась в сфере внутренней миграции: усилен механизм регистрации мигрантов внутри страны, действует квота по переселению в северные и северо-восточные регионы Казахстана.

Ключевые слова: миграция, внешняя миграция, внутренняя миграция, нерегулируемая миграция, интенсивность миграции, экономические факторы миграции, миграционная политика.

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Current State of the East Kazakhstan Transportation and Logistics Complex

Abstract

Object: study of the current state and development priorities of the transport and logistics complex of the East Kazakhstan region.

Methods: the theoretical basis of the research is the works of domestic and foreign scientists-economists on the development of the transport and logistics complex, legislative and regulatory acts of the Republic of Kazakhstan. The information base of the research is based on the data of the statistics Committee of the Ministry of economy of the Republic of Kazakhstan and the results of the authors' research. The methodological basis of the research is a systematic approach, abstract-logical, economic-statistical, monographic methods of studying economic processes.

Findings: this article presents the results of the analysis of the socio-economic development of the East Kazakhstan region and the transport complex of the region. The analysis revealed the main problems of development of the transport and logistics complex of the East Kazakhstan region, including limited logistics and technical capabilities of carriers, underdeveloped infrastructure, lack of developed transport and logistics centers, warehouses and terminals, lack of qualified specialists, low quality of service.

Conclusions: the main factors affecting the transport and logistics complex of the East Kazakhstan region are studied. As a result of the research, priority measures for the development of the transport and logistics complex of the region are proposed, including modernization of transport logistics, construction of large warehouse complexes and improvement of production infrastructure, creation of an effective network of transport communications and use of innovative technologies in the transport and logistics complex.

Keywords: transport complex, logistics, macroregion, regional economy, transport network, transport hubs, cargo terminals, transit, foreign trade, cargo and passenger transportation.

Introduction

The transportation and logistics complex of the region implies the interconnected functioning of the region's transport complex and the regional logistics system, which are dependent on and interact in the performance of transportation. The state of functioning and development of the complex is of global importance in the development of the national economy of any region. Therefore, the study and research paper on this issue are quite relevant. The purpose of this research paper is to study the current state and identify major problems of transportation and logistics complex of the East Kazakhstan. The research objectives were achieved due to analysis of key indicators of socio-economic and territorial development of the East Kazakhstan region as a whole, and analysis of statistical data separately on the transportation and logistics complex of the region. Moreover, regional and state programs and legislative acts were studied. Based on the conducted analytical review, priorities and problems of development of transport and logistic complex of the region have been revealed.

Literature Review

This paper is linked to a broad empirical literature explaining the theoretical basis of the issue. A large number of foreign scientists are engaged in the problems of transport and transport logistics, including T.Aized, J.S. Srail (Aized, Srail, 2020), J. Blyde, D. Molina (Blyde, Molina, 2015), A. Diogo, P. Lima, F.W. Mascarenhas, E.M. Frazzon (Diogo et al., 2015), S.M. Rezer, T.A. Prokofiev, C.C. Goncharenko

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(Rezer et al., 2010), V.I. Apattsev, S.B. Levin, V.M. Nikolashin (Apattsev et al., 2003), V.I. Sergeev (Sergeev, 2015).

In the study of issues related to the national transport industry development, such economic scientists took part: O. Sabden, Zh.S. Raimbekov (Sabden, Raimbekov, 2010), B.U. Syzdykpaeva (Raimbekov, Syzdykpaeva, 2019), V. Mozharova (Mozharova, 2011), T.B. Suleimenov, M.I. Arpabekov, Zh.M. Kuanyshbaev (Suleimenov et al., 2015), A.S. Koichubaev (Koichubaev, 2013).

Methods

The research methodology is a set of methods, mechanisms, principles and measures for the development of the transport and logistics complex of the East Kazakhstan region. The study was conducted using General methods used in Economics, using a systematic approach that provides the necessary depth of study of the scientific problem. The sources of the research are theoretical and analytical articles, works of Kazakhstani and foreign authors, which address the problems of transport and transport logistics.

When writing the article, the authors used the following general scientific methods: empirical-theoretical analysis, statistical and normative analysis, synthesis, analogy, generalization, as well as methods of scientific knowledge. Methods of quantitative analysis and synthesis, methods of statistical groupings and dynamic series were used in data processing. These methods made it possible to ensure the reliability of the analysis and the validity of the conclusions.

Information base of research made up of legislative and other normative acts of the Republic of Kazakhstan, statistics Agency of the Republic of Kazakhstan on statistics, analytical materials, materials of scientific economic literature and periodicals, materials of scientific-practical conferences, electronic resources.

Findings

East Kazakhstan is the developed industrial-agrarian region of the country and is a part (together with Pavlodar and Karaganda regions) of the Central Eastern macro-region with the Hub center in Ust-Kamenogorsk city. According to the Committee of Statistics of the Ministry of National Economy of the Republic of Kazakhstan data, Gross Regional Product (GRP) for 2019 amounted to 4 088.8 billion Kazakhstani tenge, with an increase of 132.1 percent compared to 2017 (3 174.8 billion Kazakhstani tenge). (Kólik statistikasy, 2019).

Among other regions by this indicator, the East Kazakhstan is in the 9th place with a share of 5.9 percent of the total GDP of Kazakhstan (68 956.4 billion Kazakhstani tenge). By GRP per capita, the region ranks 9th place in Kazakhstan. GRP per capita dynamics of the region is to a great extent conditioned by the maintenance of positive growth rates in the main industries. The share of goods production has reached 46.0 percent, the share of services – 54 percent. The share of industry in the regional economy structure is also quite significant: about 35.5 percent in GRP.

In 2019, the volume of industrial production was 2141.5 billion Kazakhstani tenge, compared to 2017 (1 581.5 billion Kazakhstani tenge), the growth rate was 135.4 percent. The share of the region in the national industrial production volume is 7.3 percent. Agriculture is one of the basic branch of the local economy for 14 out of 15 areas (except for the Altay area). The share of agriculture in the GRP of the region is 8.5 percent. Gross output of agriculture in 2019 amounted to 594.8 billion Kazakhstani tenge, the growth rate of the industry compared to 2017 (472.0 billion Kazakhstani tenge) was 126 percent. The region share in the volume of the national GDP of agriculture is 11.4 percent. The volume of investments in fixed capital from 2017 (436.1 billion Kazakhstani tenge) increased by 142.0 percent and in 2019 amounted to 649.3 billion Kazakhstani tenge. The retail trade volume in 2019 amounted to 1 001.1 billion Kazakhstani tenge, compared to 2017 (787.6 billion Kazakhstani tenge), the growth rate was 127.1 percent.

East Kazakhstan is distinguished by developed industrial infrastructure, which is represented by all main modes of transport: railway, aviation, water, and automobile. The regional transportation complex has a crucial role to play in the implementation of inter-economic and interstate relations. Road transport plays an important role in the development of market infrastructure, expansion of domestic and foreign trade, and the status of the main carrier belongs to this type of transport. The following main transportation hubs should be distinguished in this region: Ust-Kamenogorsk, Semey, Ayagoz, and Sharsk.

The Semey transportation hub is the main one in the East Kazakhstan region, as large transport highways, both the railway and automobile, pass through it. It connects both intra-Republic and inter-Republic highways. The Ust-Kamenogorsk transport hub connects the region's districts. Ayagoz transport hub is a

link between the largest highways of the republic. By this time, the Sharsk transport hub is not as important in our region as the Semey one, but its importance is expected to increase in the near future.

Rail transport. Railroads connect the regional center with the cities of Altay, Ridder, Semey, Ayagoz, Shar and Shemonaikha. There are also railway lines leading outside the region: “Semey – Lokot”, “Semey – Almaty”, “Semey – Pavlodar”, “Zashchita – Lokot”, “Zashchita – Altay”, “Zashchita – Leninogorsk” and “Zashchita – Shar”. The extended length of the main railroads in the region is 1 209 km, which is 7.3 percent of the total length of the national railroads. The density of the region's railroads is 4.1 km per 1 000 square kilometer, which is 1.4 km lower than the national average (in Kazakhstan – 5.5 km per 1 000 square kilometer). Railway tracks in the region are mainly single-track (10.5 km from common tracks – double-track), lines are not electrified. There are 298 settlements of the region having access to the railway (radius up to 50 km), which is 42 percent. There is no railway service in Abaj, Beskaragaj, Zajsan, Katon-Karagaj, Kokpeky, Kurchum, Tarbagataj, and Urdzhar areas.

In the region there are two branches of railroads, these are branches of the “National Company “Kazakhstan Temir Zholy” – “Semey Branch of The Road” JSC in the city of Semey and East Kazakhstan branch of the railway (so-called “Zashchita”). Transportation of passengers and luggage by rail is carried out in the following directions: “Ust-Kamenogorsk – Almaty”, “Ridder – Nur-Sultan” (with one trailer car to Moscow), “Tomsk – Ridder”, “Semey – Kyzylorda”, and transit: “Novokuznetsk – Semey – Bishkek”; “Novosibirsk – Semey – Almaty”; “Novosibirsk – Semey – Tashkent”; “Pavlodar – Semey – Almaty”; “Pavlodar – Semey – Karaganda”, as well as inter-district communications “Zashchita – Zyryanovsk” and “Zashchita – Leninogorsk”.

Aircraft. There are 4 airports in the region. 2 airports are allowed to serve international flights (Ust-Kamenogorsk, Semey) and the other two serve only local airlines (Zajsan, Urdzhar). Ust-Kamenogorsk airport is categorized by ICAO standards as Category I. Airport Semey (“Semey International Airport” LLP) serves the following routes: Almaty, Nur-Sultan, Ust-Kamenogorsk, Urdzhar. Since 2016, as part of the Nurlyzhol State Program, the runway, taxiways and airport terminal have been reconstructed. Ust-Kamenogorsk airport serves the following routes: Almaty, Nur-Sultan, Karaganda, Moscow, Novosibirsk Semey, Urdzhar, Zajsan. In 2017 the arrival terminal for 200 passengers per hour was put into operation. The issue of reconstruction of the airport complex is under study. It is also planned to complete the reconstruction of the airport of Semey, which will increase the number of flights and passengers served, improve flight safety.

Waterway transport. The main navigable highway of inland waterways of the East Kazakhstan region is the Irtysh River, which flows from the border of the People's Republic of China to the border of the Russian Federation. The length of the river on the territory of the Republic of Kazakhstan – 1 698 km, including the territory of the region – 1 116 km. By now in the region, there are three shipping sluices, two river cargo ports: a cargo port of “Irtysh-Trans” LLP and a river port in Semey. There are two lines of ferry transportation of passengers in the area of Kaznakovka and Ulken Naryn villages, which are carried out by private organizations. The ferry crossings provide residents of Kurchum and Katon-Karagaj areas with transport services.

Road and municipal electrically driven transport. The region has the longest network of public highways in all country – 11,997.6 km, including: of national importance – 3,414 km (28.7 percent), of regional importance – 3 186 km (26.6 percent), of regional importance – 5 397.6 km (44.7 percent), of which 7 057.4 km are paved, 4,167.65 km are gravel paved and 772.5 km are unpaved, with 514 bridge structures and 6,653 culverts, the density of paved roads is 36.6 km per thousand kilometers.

According to the Kazakhstan Ministry of Internal Affairs in 2018, the number of buses in the region amounted to 6 182 units, 3 627 of which are privately owned. In 2018, the number of registered cars amounted to only 301.4 thousand units, of which 288.3 thousand units were in private ownership, i.e. provision of the population with passenger car transport is 21.8 units per 100 people. The total number of trucks in 2018 amounted to 32 058 units, of which about 70 percent are owned by private individuals.

The main transit corridor passing through the territory of the East Kazakhstan region is a M-38 Highway “Omsk – Majkapchagaj” (republican importance), exit to the 2nd Trans European Corridor (including People's Republic of China), the total length of the road is 1 099 km. East Kazakhstan is connected with Almaty, Karaganda, Pavlodar regions by highways of republican importance “Almaty – Ust-Kamenogorsk”, “Karaganda – Ayagoz – Bogas”, “Omsk – Majkapchagaj”. Besides, the region is connect-

ed with the Chinese road (“Taskesken – Bahty”) and the Russian road (“Ust-Kamenogorsk – Shemonaikha – State Border of the Russian Federation”).

Transportation of passengers by road is carried out on 326 regular routes. These include international routes (18), intercity intraregional routes (76), intraregional routes (51), intra-settlement routes (14), and intra-city routes (145). In nine areas, roads are the only means of communication. The most favorable situation with the route traffic coverage is observed in Shemonaikha and Boroduliha areas. The settlements of Abaj, Ayagoz, Zharmin and Katon-Karagaj areas are the least provided with regular route communication. The main reasons for the absence of road transport in settlements are the lack of a roadbed, unprofitability of transportation, due to the small population (less than 100 people), as well as the implementation of transportation by private passenger cars. To improve the work in this direction, the system of electronic sale of tickets for long-distance and international routes through terminals, as well as through payment cards sold through the Internet, work is being done to equip buses with the global positioning system. In 2018, 62.3 billion Kazakhstani tenge was allocated from all sources for road repairs of the region's roads and 391 km of roads were repaired. As a result, the share of roads in good and satisfactory condition increased to 78 percent.

In the city of Ust-Kamenogorsk, there is a streetcar service, the length of which in the two-track calculation, in 2018 amounted to 14.5 km, the total number of rolling stock streetcar park – 54 units.

The largest volume of cargo and passenger transportation is by road and rail. Road transport carries 89.9 percent of cargoes, railroad transport – 10 percent. The volume of passenger transportation by road is 96.2 percent, railroad – 2.5 percent, aviation – 1.3 percent.

The main objective of transport is timely, quality, and full satisfaction of the needs of the economy and population in transportation. According to the Committee on Statistics of the Ministry of Economics of the Republic of Kazakhstan data, in the last three years, there is a tendency of growth of the main indicators of the transport complex of the region (Table 1).

Table 1. Dynamics of the major indicators of the East Kazakhstan transportation and logistics complex for the period from 2017 to 2019

No.	Indicator	2017	2018	2019	2019 to 2017, %
1	Gross transport (warehousing) services, bln. KZT	411,4	437,4	460,1	111,8
2	Share of transport services in GRP, %	10,4	9,9	8,8	84,6
3	Passengers transported, mln. people	1 709,2	1 714,9	1 716,3	100,4
4	The passenger turnover, mln. passenger-km	22 272,4	22 762,4	24 449,8	109,7
5	Transported cargo, baggage, cargo baggage, mln. tons	600,8	631,5	662,2	110,2
6	Cargo turnover, bln. tonne-km	16,1	16,1	16,2	100,6
7	Tariff index for the carriage of goods by all modes of transport	103,1	101,8	103,3	100,1

Note: compiled by the authors according to the data of the source: Kólik statistikasy. Qazaqstan Respyblikasy Ultyq ekonomika ministrlygi Statistika komiteti (2019), available at: <https://stat.gov.kz/official/industry/18/statistic/6>

Thus, according to preliminary data, 1 716.3 million passengers were transported by all modes of transport in 2019, passenger turnover was 24 449.8 million passenger-km, which is 9.7 percent more than in 2017. The volume of transported cargoes amounted to 662.2 million tons, cargo turnover amounted to 16.2 billion tonne-km, as compared to 2017 the volume of cargo transportation increased by 10.2 percent, and cargo turnover by 0.6 percent. Gross output of transport services of the region in 2019 amounted to 460.1 billion Kazakhstani tenge, compared to 2017 growth is 48.7 billion Kazakhstani tenge or 11.8 percent. The share of transport services in GRP was 8.8 percent, compared to 2017, there is a decrease of this indicator by 15.4 percent. The index of tariffs on carriage of goods by all types of transport is growing by 0.1 percent. Average range of transportation of 1 ton of cargo and average distance of transportation of 1 passenger is 25.5 km and 13.3 km respectively.

Investments in fixed assets of the region's transportation and logistics industry are constantly growing. Thus, in 2019 the volume of investments into fixed assets of transport and warehousing amounted to 70 693.3 million tons, as compared to 2017 it increased by 23 711.5 million tons (50.4 percent). In the total vol-

ume of investments in the region (619 387.8 million Kazakhstani tenge), the share of the industry “Transport and Storage” was 11.4 percent, which exceeds several times the investments in agriculture, construction, and trade (Table 2).

Table 2. Structure of investments in fixed capital by main types of economic activities for the period from 2017 to 2019

No.	Name	2017	2018	2019
1	Total by region, mln. KZT	436107,0	488518,5	619 387,8
	Including:			
2	Agriculture, forestry and fishery	18364,3	26938,5	30 863,7
3	Industry	268353,0	289349,6	391 539,0
4	Building and construction	3857,4	7250,6	10 052,0
5	Trade, repair of cars and motorcycles	6583,1	13756,1	9714,3
6	Transportation and warehousing	46981,8	58141,4	70 693,3
7	Accommodation and public catering services	8241,6	3249,8	3 069,1
8	Financial and insurance activities	1298,9	997,0	3 794,2
9	Communication	1805,5	2977,1	1 656,8

Note: compiled by the authors according to the data of the source: Otchet po razvitiyu malogo i srednego predprinimatel'stva v Kazahstane za 2018 god v razreze regionov (2019), available at: https://atameken.kz/uploads/content/files/report_2018.pdf

The transport industry is one of the profitable sectors of the economy. According to the statistical data, for the last three years, there is a tendency of growth of incomes on the main types of transport and warehousing activities in the region.

According to preliminary data, in 2019, industry revenues amounted to 37 278.8 million Kazakhstani tenge, compared to 2017, revenues increased by 36.8 percent (10 043.8 million Kazakhstani tenge), including revenues from passenger transportation increased by 33.3 percent (750.2 million Kazakhstani tenge), and transportation of cargo, luggage and cargo luggage by 75.1 percent (8 666 million Kazakhstani tenge).

In 2019, compared to 2017, revenues from vehicle rental also increased by 20.7 percent, revenues from non-transportation activities by 44.2 percent, and auxiliary transport activities by 2.8 percent (Table 3).

Table 3. Dynamics of transport industry income for the period from 2017 to 2019, mln. KZT

No.	Indicator	2017	2018	2019	2019 to 2017, %
1	Total income	27 235,0	34 843,1	37 278,8	136,8
2	passenger transportation	2 250,7	x	3 000,9	133,3
3	freight forwarding, luggage and cargo transportation	11 538,9	16 973,4	20 204,9	175,1
4	transport support activities	12 055,4	14 095,4	12 394,6	102,8
5	rental of vehicles with a driver (crew)	1 390,0	1 550,2	1 678,4	120,7
6	income from non-transportation activities	5 122,7	2 629,3	7 390,8	144,2

Note: compiled by the authors according to the data of the source: Kólik statistikasy. Qazaqstan Respyblıkasy Ulttyq ekonomika ministrліgi Statistika komiteti (2019), available at: <https://stat.gov.kz/official/industry/18/statistic/6>

According to preliminary data, in 2019 the number of employees in the “Transport and Warehousing” industry was 43.9 thousand people, that is about 6.4 percent of the total number of employees in the region (681.0 thousand people). Thus, compared to 2017 there is a slight increase (about 1 percent). The level of employment in the transport sector is one of the highest. The average monthly nominal salary by the “Transport and Storage” economic activity per employee in 2019 was 174 621 thousand Kazakhstani tenge, this figure is more than almost 25 percent than in 2017. The average salary per employee in this industry was 8.6 percent higher than the average monthly nominal salary in the region as a whole (160 711 Kazakhstani tenge).

Also, in the field of transport and warehousing, the level of average monthly nominal wages is higher than in agriculture, forestry and fisheries, accommodation and catering services and trade, repair of cars and motorcycles.

Table 4. Number of employees and average monthly nominal salary, by economic sector

No.	Name	Number of employees, ths. people			Average monthly nominal salary, KZT		
		2017	2018	2019	2017	2018	2019
1	Total by region	687,6	679,0	681,0	125911	140 126	160 711
	Including:						
2	Agriculture, forestry and fishery	105,5	104,9	103,1	93 200	104 421	126 773
3	Industry	111,2	112,3	110,8	178254	205 905	228 740
4	Building and construction	34,4	34,4	33,2	130641	153 166	182 399
5	Trade, repair of cars and motorcycles	120,9	120,9	122,7	123 745	142 178	161 250
6	Transportation and warehousing	42,7	42,7	43,9	139711	163 348	174 621
7	Accommodation and public catering services	29,5	20,5	15,8	85 462	101 054	110 125
8	Financial and insurance activities	8,5	6,8	12,5	178713	195 144	211 565
9	Communication	15,2	14,3	9,5	161 068	167 609	187 895

Note: compiled by the authors according to the data of the source: Kólik statistikasy. Qazaqstan Respublikasy Ulttyq ekonomika ministrlygi Statistika komiteti (2019), available at: <https://stat.gov.kz/official/industry/18/statistic/6>

The movement of goods and cargo is associated with the need to perform certain operations, the so-called transport services. Forwarding companies are engaged in organizing the transportation of goods from client to consignee by different modes of transport: road, rail, sea, aviation. Besides, freight forwarding companies carry out storage and storage of goods, insurance, as well as informing the client about all points of cargo location. There is an intensive form of the market of transport-forwarding and customs warehousing services in the region. A network of customs warehouses, intermediary, and commercial structures to provide warehousing, transportation, and freight forwarding services is registered and operates. According to the “Kedentransservice” data, the following cargo terminals operate in the region (Table 5).

Table 5. Cargo terminals in East Kazakhstan region

No.	Location	Existing area	Activity
1	Semey	The total area is 38.4 hectares. The closed warehouse PVC area of 2 124 square meters, actually used 1 200 square meters. The load of the terminal is between 30 and 40 percent. There are 8 access roads total long (useful) 6 557.71 meters. The capacity of the loading and unloading front is 451 conventional cars.	Medium-tonnage, large-tonnage containers, heavy cargoes, trucks and cars, caterpillar vehicles, dry cargoes. All type of cargo, except for dangerous and explosive ones.
2	Ust-Kamenogorsk	The total area is 18 hectares. The closed warehouse 1 802 square meters of PVC and fenced outdoor area ZTK of 1000 square meters. There are 8 access roads with a total length (useful) of 3 105.3 meters. The capacity of the loading and unloading front is 69 conventional cars.	Medium-tonnage, large-tonnage containers, heavy cargoes, trucks and cars, tracked vehicles.

Note: compiled by the authors according to the data of the source: Avtomobil'nyj transport. Oficial'nyj sajt akima Vostochno-Kazahstanskoj oblasti (2019), available at: <https://www.gov.kz/memleket/entities/akimvko/press/article/details/transport?lang=ru>

There are six customs checkpoints in the region: “Oskemen-Center of Customs Clearance”, “Auezhaj Oskemen”, “Bahty”, “Majkapchagaj”, and crossing points: “Zajsan”, “Majkapchagaj”, and “Semey”. The largest and key international checkpoints in eastern Kazakhstan, through which the main passenger and transport flows are carried out, are “Bahty” and “Majkapchagaj” (Transportnaya otrasl' Kazahstana, 2019). The prospects for developing the potential of the region's transport and logistics complex directly depend on the pace of development of the region as a whole and, in particular, on the development of trade and the volume of investments in priority sectors, including transit traffic.

The development of the transportation and logistics complex of the East Kazakhstan region is implemented within the framework of sectoral and intersectoral programs adopted in the Republic of Kazakhstan. The most significant inter-sectoral programs aimed at realizing the transport and transit potential of Kazakh-

stan are the State Program for Development and Integration of Infrastructure of the Transport System of the Republic of Kazakhstan until 2020, which was preceded by the Program for Development of Transit and Transportation Potential of the Republic of Kazakhstan for the period from 2004 to 2006, the State Program for Development of Transport Infrastructure in the Republic of Kazakhstan for the period from 2010 to 2014 and the “Nurly Zhol” State Program of Infrastructure Development for the period from 2015 to 2019. Currently, the “Nurly Zhol” State Program of Infrastructure Development for the period from 2020 to 2025 is being implemented. Within the framework of the state programs on the development of transport and transit potential, about 7 930 billion tenge were allocated. In the framework of the “Nurly Zhol” State Program, it was supposed to finance in the amount of 5 539 billion tenge (Gosudarstvennaya programma razvitiya infrastruktury "Nurly zhol" na 2020-2025 gody, 2020).

The “Nurly Zhol” State Program assumes the performance of the main serious tasks for the national development of transport and logistics infrastructure, such as the development of transport and logistics infrastructure between the regions of Kazakhstan, the formation of macro-regions on the principle of hubs associated with the city of Nur-Sultan and between the main roads, rails and airlines on the beam principle. Moreover, the task was set to implement 7 major road projects, which will open up opportunities for the wide use of transport lines within the country. At the moment, work is continuing to improve legislation in the transport industry. Kazakhstan plans to become a Eurasian transport and logistics and business hub - such an idea was put forward by the Head of State in the context of the revival of the Silk Road.

Following the order of the President of the Republic of Kazakhstan based on “NC KTZH” JSC was established “KTZExpress” JSC, which today is a logistics operator for the creation of transport and logistics centers (TLC) in the country. According to “KTZExpress” JSC in Ust-Kamenogorsk, it is planned to build an “A” class TLC at the expense of “NC KTZ” JSC and private investments. The national transport and logistics center provides strict requirements for the architecture of the warehouse, the width of the flights, the height of the storage shelves, the temperature regime, the location of warehouses on the principle of transport multimodality, plus stringent requirements for safety, including fire safety. The feasibility study of the project has been developed (Razvitiye seti transportno-logisticheskikh tsentrov Kazakhstana, 2017).

As of today, the first stage of the “B+” class TLC (so-called “Severnoe”) construction has been completed in Semey. This shopping mall will provide the following services: loading and unloading operations, cargo handling, packing, billing, warehousing, renting of retail space. It is planned to service the cargo in the following directions: China-Russia transit, China-Kazakhstan import, Kazakhstan-Russia export. It is planned to create a production base for storage, packaging, and processing of products in the city of Semey, with a production capacity of 450 thousand tons per year, an area of 30 thousand square meters. The total volume of expected investment will amount 32.8 million USD (Prognoz sotsial'no-ekonomicheskogo razvitiya Vostochno-Kazakhstanskoy oblasti na 2017-2021, 2017).

To ensure year-round uninterrupted traffic between Zharmin, Katon-Karagajs, Kurchum, Kokpekty, Zajsan and Altaj areas of the East Kazakhstan region, it is planned to implement the “Construction and Operation of The Bridge Crossing of The Bukhtarma Reservoir in Kurchum District” project. This project envisages the construction of an overpass (bridge crossing). The length of the planned 2 lane highway bridge is 1 300 meters, width 12.2 meters. Design and budget documentation (DBD) was also developed, construction cost – 37.2 billion Kazakhstani tenge. In the implementation of this project will be possible to cross the Bukhtarma Reservoir at any time of year, will reduce travel time, besides, the safety of vehicular traffic in winter.

In 2018, 62.3 billion Kazakhstani tenge was allocated from all sources for road repairs of the region's roads and 391 km of roads were repaired. As a result, the share of roads in good and satisfactory condition increased to 78 percent. It is planned to increase the share of highways in “good” and “satisfactory” condition up to 81 percent by 2021. The following local activities were carried out to develop transport infrastructure:

- reconstruction of the Semey Airport (10.7 billion Kazakhstani tenge);
- reconstruction of the airport terminal complex in Ust-Kamenogorsk for 0.5 billion Kazakhstani tenge (put into operation the arrival terminal);
- construction of a bus terminal in Boroduliha village (20 million Kazakhstani tenge);
- construction of 12 passenger service points in 4 areas of the eastern Kazakhstan (Glubokoe, Urdzhar, Tarbagataj, Shemonaiha);

– DBD for reconstruction of the runway of the airport in Ust-Kamenogorsk (10.3 billion Kazakhstani tenge);

– DBD for reconstruction of the airport in Urdzhar village (4.7 billion Kazakhstani tenge).

Besides, 8 projects on reconstruction on the roads of national importance are being implemented. In 2018-2019, 61.5 billion Kazakhstani tenge were allocated for these tasks (in 2018 – 14.5 billion Kazakhstani tenge, in 2019 – 47.0 billion Kazakhstani tenge). It is expected that further development of transport infrastructure will be achieved through the implementation of the project for the construction of the “Nur-Sultan – Pavlodar – Kalbatau – Ust-Kamenogorsk” motor corridor and the completion of work in the directions “Taskesken – Bahty” and “Omsk – Majkapchagaj”. It is planned to ensure quality transport accessibility of customs checkpoints (Majkapchagaj, Bahty), territories with undeveloped mineral deposits, as well as territories with tourist potential like Alakol, Zajsan, Katon-Karachi, and others. Based on the Ust-Kamenogorsk city hub there will be formed a single system of Central Eastern macro-region for delivery and storage of goods from China to Kazakhstan, as well as countries of Eastern and Western Europe (Sushchestvuyushchie na territorii RK gruzovye terminaly AO Kedentransservis, 2019).

The conducted analysis testifies to the stable operation of the region's transport industry, and the growth of its main indicators is observed. Stabilization of the economic situation, development of private entrepreneurship in the industry allows increasing the volumes of transportation. Favorable geographical location and sufficiently developed transport and logistics complex of the East Kazakhstan region provides an opportunity to create in the regional transportation and logistics system on the way from China to the Russian Federation, as one of the elements of the development of the logistics component of the republic's economy.

Results

Despite the national measures are taken in the development of the East Kazakhstan transportation and logistics complex, there are several issues:

– the unsatisfactory condition of fixed assets, the material base of the transport complex, high level of wear and tear of transport infrastructure objects, insufficient provision of settlements with regular passenger traffic (30 percent);

– illegal transportation of passengers and luggage, which affects the safety of passengers; low capacity of the railway line due to their “one way-track”;

– absence of electrified railroad tracks, which significantly affects the cost of transportation; incomplete coverage of the entire territory of the region by rail;

– Insufficient development of air traffic in the region (no air traffic with remote settlements in the region);

– low quality of performed work and service rendered;

– low level of innovation and process automation, lack of developed transport and logistics centers, warehouses and terminals, insufficient number of qualified specialists.

The unbalanced location of the transport and communication network in the region impedes the development of a common economic space and the growth of population mobility. An industrially oriented network of railroads and freeways developed without taking into account the needs of the population. Its further optimization and partial reorientation are required, taking into account the prospects for territorial development, deployment of productive forces, and population settlement. Significant unevenness in the development of the transport network impedes economic development in the region. Some rural settlements do not have year-round transport links.

To improve the current state of transportation and logistics complex of the region it is necessary to solve a number of the following objectives:

– systematic development of all modes of transport and improvement of transport infrastructure;

– formation of an effective network of transport communications, renewal, and modernization of the fleet of vehicles;

– development of transport logistics, construction of large warehouse complexes, and improvement of infrastructure in key points of direct interaction between different modes of transport;

– research and implementation of the modern state regulation mechanisms of private transport market;

– education and training of qualified personnel of managerial and engineering-technical level;

– improvement of the local financial support system, attraction of investors and developers;

– improvement of the implementation mechanisms of R&D developments;

- use of innovative technologies in the transportation and logistics complex, provision with modern technologies and means of communication and information;
- regulation and improvement of tariff policy on transport;
- improvement of cargo and passenger transportation safety by all modes of transport;
- improving the quality of work performed and services provided by the transport system.

The mentioned measures should promote the development of the transportation and logistics complex of the region.

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Шығыс Қазақстан облысының көлік-логистикалық кешенінің қазіргі жағдайы

Аңдатпа

Мақсаты: Шығыс Қазақстан облысының көлік-логистикалық кешенінің қазіргі жай-күйі мен даму басымдықтарын зерделеу.

Әдісі: Зерттеудің теориялық негізі көліктік-логистикалық кешенді дамыту мәселелері бойынша отандық және шетелдік ғалым-экономистердің шығармалары, Қазақстан Республикасының заңнамалық және нормативтік-құқықтық актілері болып табылады. Зерттеудің ақпараттық негізін Қазақстан Республикасы Экономика министрлігі Статистика комитетінің деректері мен авторлардың зерттеу нәтижелері құрайды. Зерттеудің әдіснамалық негізі экономикалық үдерістерді зерттеудің жүйелі тәсілі, абстрактілі-логикалық, экономикалық-статистикалық, монографиялық әдістері болып табылады.

Қорытынды: Мақалада Шығыс Қазақстан облысының және өңірдің көлік кешенінің әлеуметтік-экономикалық дамуын талдау нәтижелері келтірілген. Жүргізілген талдау Шығыс Қазақстан облысының көлік-логистика кешенін дамытудың негізгі проблемаларын, оның ішінде тасымалдаушылардың шектеулі логистикалық және техникалық мүмкіндіктерін, инфрақұрылымның дамымағандығын, дамыған көлік-логистика орталықтарында қойма, үй-жайлары мен терминалдардың болмауын, білікті мамандардың жетіспеушілігін, қызмет көрсету сапасының төмендігін анықтауға мүмкіндік берді.

Тұжырымдама: Шығыс Қазақстан облысының көлік-логистикалық кешеніне әсер ететін негізгі факторлар зерттелді. Жүргізілген зерттеу нәтижесінде өңірдің көлік-логистикалық кешенін дамыту бойынша басым шаралар, оның ішінде көлік логистикасын жаңғырту, ірі қойма кешендерін салу және өндірістік инфрақұрылымды жетілдіру, көлік коммуникацияларының тиімді желісін құру және көлік-логистикалық кешенде инновациялық технологияларды пайдалану ұсынылды.

Кілт сөздер: көлік кешені, логистика, макроөңір, өңірлік экономика, көлік желісі, көлік тораптары, жүк терминалдары, транзит, сыртқы сауда, жүк және жолаушылар тасымалы.

Э.С. Мадиярова, Л.Б. Габдуллина, А.Ж. Зейнуллина

Современное состояние транспортно-логистического комплекса Восточно-Казахстанской области

Аннотация

Цель: Изучение современного состояния и приоритетов развития транспортно-логистического комплекса Восточно-Казахстанской области.

Методы: Теоретической основой исследования являются произведения отечественных и зарубежных ученых-экономистов по проблемам развития транспортно-логистического комплекса, законодательные и нормативно-правовые акты Республики Казахстан. Информационную основу исследования составили данные Комитета по статистике Министерства экономики Республики Казахстан и результаты исследований авторов. Методологической основой исследования являются системный подход, абстрактно-логический, экономико-статистический, монографический методы изучения экономических процессов.

Результаты: В статье приводятся результаты анализа социально-экономического развития Восточно-Казахстанской области и транспортного комплекса региона. Проведенный анализ позволил выявить основные проблемы развития транспортно-логистического комплекса Восточно-Казахстанской области, в том числе ограниченные логистические и технические возможности перевозчиков, неразвитость инфраструктуры, отсутствие развитых транспортно-логистических центров, складских помещений и терминалов, недостаток квалифицированных специалистов, низкое качество обслуживания.

Выводы: Изучены основные факторы, влияющие на транспортно-логистический комплекс Восточно-Казахстанской области. В результате проведенного исследования предложены приоритетные меры по развитию транспортно-логистического комплекса региона, в том числе модернизация транспортной логистики, строительство крупных складских комплексов и совершенствование производственной инфраструктуры, создание эффективной сети транспортных коммуникаций и использование инновационных технологий в транспортно-логистическом комплексе.

Ключевые слова: транспортный комплекс, логистика, макрорегион, региональная экономика, транспортная сеть, транспортные узлы, грузовые терминалы, транзит, внешняя торговля, грузовые и пассажирские перевозки.

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Theoretical aspects of studying of the innovations commercialization process

Abstract

Object: to consider theoretically-methodological aspects, also management mechanisms by the process of innovations commercialization.

Methods: methods of system and structural analysis are used in the article, allowing to consider the scientific problems investigated in the article in a comprehensive manner, also draw conclusions that fully reveal the essence and specifics of the studied research object.

Findings: modern trends in the theory of innovations commercialization considered in the article, studied the conceptual apparatus in the field of innovations commercialization; the process of innovations commercialization is investigated, the relationship of its participants is established, the ways of its implementation are determined; the stages and phases of the innovation process are concretized.

Conclusions: the concept of innovations commercialization, the innovation process, the stages of its implementation is investigated in presented scientific article. The article describes the main phases and stages of the innovation process, analyzes the model of commercialization of innovations, also the criteria of the degree of its successful implementation. The ways of innovations commercialization, which are the most relevant today are characterized, the potential profit for a certain period, the main items of the enterprise income and expenses with successful implementation of the process of innovations commercialization are presented. The formulas of the potential profit calculating for a certain period of innovative product commercialization are reflected. In the analyzed scientific studies of foreign and domestic researchers, by the authors concluded that in the conditions of modern economic development, the restructuring of a number of the world countries economies the into digital and innovative components, commercialization is one of the most important components of the successful implementation of the innovation results, therefore, it is advisable to carry out this process at an earlier stage, starting from the moment of fundamental research by companies in the structure of their activities in the field of R&D.

Keywords: innovations, innovations commercialization process, innovation stages, innovative project, commercialization of results, R&D, innovations commercialization mechanism, innovations commercialization scheme.

Introduction

The current global economic transformations require rapid and dynamic development of innovations in many countries. Noncompliance of the innovation cycle principles and investment in problem areas of the economy may result in decrease of the country's competitiveness in the world market. Therefore, a country's level of innovation activity is rightly considered a key factor in its success in the international arena. And, as a consequence, the solution of the enterprises social and economic problems in developed countries is innovation and the level of technological development.

The processes of technological development in the post-industrial economy help to transform one type of resource into another, stimulating the process of forming new wealth. Actions aimed to preventing (reduction) of the economic gap between developed and developing countries highlighted the relevance of creating a favorable environment for innovation in developing countries, contributing to the development of innovation and supporting of the business entities activities. Achieving of this goal is possible thanks to the development and implementation of an innovation management system in the company. The system should take into account the special conditions of economic activity in developing countries, using in full

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volume the positive dynamics of developed countries. Considering of the current market instability, investment return in new products or technologies cannot be guaranteed. However, there are ways to reduce risks and increase probability of successful achieving implementation of innovative projects. One of these methods is the innovations commercialization as an element of a separate business process.

The process of commercialization, extended to the entire life cycle of innovative products, contributes to an increase of the product using efficiency, to discovery of a new practically useful characteristics, expansion of consumers and sales markets (Olefrenko O., Shevliuga O., 2017).

Literature Review

Research of the innovative development processes of the country as a whole and the behavior of business entities, in particular, are widely reflected in the scientific literature. At the same time, fragmentary attention is paid to the problems of the innovations commercialization process. Many scientists have considered questions related with the innovation commercialization in their writings. According to the author Bozeman B. (1997), commercialization is successful when projects are more likely to lead to the commercialization of a product if they are initiated either by the company's research and development managers or by top managers of the company. Commercialization of high-tech products it is a process of establishing, selling and promoting of high-tech products in the market, which provides the expected economic benefits for the industry. An analysis of statistical, expert and empirical data shows that the problem for the domestic industry is a commercialization of high-tech products, and not its creation (Shpak et al., 2014).

Commercialization is an important issue of improving economic efficiency. Kalynychenko (2012) proposed a marketing approach for the commercialization of the innovative activity results in the industry, which consists of the stages of commercialization, marketing, compliance of the project management processes and design application, scenario and network planning. Innovations commercialization mainly refers to the process of the scientific discoveries transformation and inventions into market products and services, mainly by licensing of patents for companies or creating «start-up» companies, that depend on the transfer of university intellectual property to them (Mohannak K., Samtani L., 2014).

The interpretation of the concept of "commercialization", proposed by different authors, is characterized by diversity. In particular, the Law of the Republic of Kazakhstan dated October 31, 2015 № 381-V "About commercialization of the results of scientific and (or) scientific-technical activities" (as amended on June 25, 2020) interprets the commercialization of the results of scientific and (or) scientific and technical activities in the following way – it is "activity, related with the practical application of the results of scientific and (or) scientific-technical activities, including the results of intellectual activity, with the aim of bringing new or improved goods, processes and services to the market, directed to the income generating (art. 1, p.3)" [Law of the Republic of Kazakhstan].

According to the scientist J. Kozmetsky, commercialization is "a process with the help of the results of R&D are timely transformed into products and services on the market" (Kozmetsky J., 1999). Authors Ya.N. Grik and E.N. Monastyrny, are considering the commercialization of an innovative idea in the form of income receiving from its sale, or using in their own production (Grik Y.N., Monastyrny E.N., 2004). The commercialization process, according to V.V. Glukhov, S.B. Korobko, T.V. Marinina is divided into two directions:

1. "using of intellectual property in the business activity of an enterprise";
2. "commercialization of an innovative object by introducing it into economic circulation, as a result of which a profit will be obtained that reimburses the costs of scientific research, the result of which is an innovative object" (Glukhov V.V. et al., 2003) (Table 1).

Table 1. Approaches to the definition of the "innovation commercialization process" essence

Author	Definition
1	2
J. Kozmetsky (1999)	"Commercialization is a process as a result of which R&D results transforms into products and services on the market in due time".
Y.N. Grik, E.N. Monastyrny (2004)	"Innovative idea commercialization represents the receipt of income from its sale or using in own production". "Innovative ideas commercialization means receiving a profit from the sale or using it in the production process."

V.V. Glukhov, S.B. Korobko, T.V. Marinina (2003)	“The commercialization process is divided into two directions. The first is associated with the using of intellectual property in the enterprise economic activities, and the second - with the innovative product commercialization through its introduction into the economic process”.
K.V. Orlova (2017)	"From a finance, the innovation commercialization is an investment project".
M. Belitski, A. Aginskaja, R. Marozau (2018)	«The process of research commercialization is a multi-level and involves interactions between an individual researcher, a university and the external environment».
P.C. Lai (2018)	«Commercialization is the point where innovation products or services are accepted by the marketplace».
M.O. Iskoskov, V.Ch. Dana (2013)	«At implementation of innovation, the promotion of innovative products is traditionally defined as commercialization».
T. Dehghani (2015).	«Generally, commercialization can be categorized into three different layers of infrastructure, namely technical and market issues, attitudes and policies, and services. There appears to be a widely expressed belief that people's negative attitudes may impede the commercialization cycle. Experience shows that changes in scientific and technological policies of different countries have helped them make a giant leap in technology development».
S.K. Slak-Madsen et al. (2017)	"Commercialization is seen as an ability of market participants to achieve acceptance by other market participants of its advantageous offers".
D.S. Rogers et al. (2004)	"Commercialization is a delivery chain management process that provides a framework for developing and bringing new products to market in collaboration with customers and suppliers".
V. Dewangan, M. Godse (2014)	«Commercialization of ideas, which involves scaling up the innovation and formally introducing it to the market and also includes brand building, market promotion and distribution activities».
L. Aarikka-Stenroos, B. Sandberg, T. Lehtimäki (2014)	«Commercialization tends to refer to how an innovator firm can accrue income from its new product, service, concept, or technology; it includes divergent, strategic and tactical planning, and marketing activities concerning the product/concept, launch, and interactive activities with potential buyers and other relevant players».
B. El-Haj-Hassan (2012)	«The commercialization of an innovation can be defined as the process by which firms transform knowledge, discoveries, and inventions into new or significantly improved products and services that satisfy customers' needs».
The Heart of Successful Commercialization report released by Industry Canada (2006)	«Commercialization is defined as being —a complex, integrated system anchored in the world of business».
J.-M. Nikkanen (2018)	«When innovations are commercialized successfully, knowledge achieve its full benefits and produce returns from investments. Thus, commercialization can be seen as important factor of economic growth. It also enables the availability of innovation to the end customers».
J.F. Jordan (2010)	«Commercialization is a process of different steps and different actions and the outcome is to bring innovation to the market».
<i>Note: compiled by the authors</i>	

Most of the analyzed scientific definitions reveal certain aspects of the innovations commercialization, which include the choice of the form and the main participants of the process, the identification of marketing opportunities for innovative products and search of the best source of funding for the innovations commercialization. In other words, commercialization is seen as a stage of the innovation process, from the the beginning of production until the end of the decline of the product's life cycle. Domestic authors consider commercialization as a process of using the results of R&D, through which a new product or service is introduced to the common market, or involves the participation of investors to raise funds for the implementation of this innovation. While foreign scientists consider the process of commercialization as a factor of economic growth, ensuring the availability of innovations for end consumers. Effective process implementation allows management to coordinate the efficient flow of new products through the de-

livery chain, helping participants ramp up production, logistics, marketing, and other related activities to support product commercialization.

Thus, commercialization is a difficult process, consisting of separate stages, by which enterprises transform knowledge, discoveries and inventions into a new or upgraded products and services, that satisfy the needs of consumers. The result of this process is the introduction of innovations to the market.

Applied to an industrial enterprise, commercialization should be considered as an effective way for this enterprise to use the results of its innovation activities, which bring benefits (advantages) not only in the form of return on investment in R&D, but also in the form of an increase in production volumes, an improvement of the produced goods quality and reducing of the cost of production and, as a consequence – price. Commercialization able take on the role of the main driving force aimed for creating and rejuvenation of old industrial sectors and ensure the competitiveness of the industrial enterprise in the market.

Methods

In presented scientific article are used the following scientific methods: deductive method used to analyze the innovations commercialization, with a view of determination of the evaluating of their application; a method of scientific analysis, directed at studying of the theoretical foundations of innovations commercialization with the definition of phenomena that determine the mechanism of its application.

The synthesis method allows to obtain a broad research results, to form and generalize conclusions about current trends and phenomena in the theories of innovation commercialization. The graphic method and abstract logic method are used.

In addition, scientific provisions on planning innovation activities, analyzing of innovation processes, also general scientific methods of cognition are used in the work: complex and abstract-logical. The search for literature sources was carried out using keywords related to the commercialization process in three main databases: Scopus (sciencedirect.com), Clarivate Analytics (webofknowledge.com) and RSCI (elibrary.ru). As part of this process, more than 100 articles of experts, specializing in the sphere of scientific developments commercialization and the implementation of effective innovation activity in industrial enterprises were analyzed.

Results

According to the report "Global Innovation Index", presented on September 2, 2020 (GII, Global Innovation Index), in which results of a comparative analysis of the 131 countries innovation systems are reflected, indicating the rating of their innovative development, leading positions were taken by countries such as Switzerland, Sweden and the United States. The Republic of Kazakhstan is in 77th place, having strengthened it by two positions compared to this same time last year (Global Innovation Index, 2020).

Today, in order to get the final positive result with the maximum possible effect as a result of using the created innovation, it is necessary to resolve the issue related to the placement of this innovation on the market, that is, to ensure the process of its commercialization.

Many scientists identify the concept of innovation commercialization with the term “innovation process”, during which novelty is transformed into innovation. For this reason, by researchers quite often commercialization is considered as a stage of the innovation process. For example, the innovation process according to Yu.P. Morozov is considered as follows: “The innovation process includes the acquisition and commercialization of inventions, new technologies, types of products and services, organizational, technological, economic, social or other solutions, also the results of intellectual activity, which are carried out in four stages” (Morozov Yu.P., 1997). The first step is conducting of fundamental researches in various higher education institutions, industry professional institutions, research institutes and laboratories. The second stage is associated with the stage of applied research, which allows to abandon from hopeless projects before the implementation stage. The third stage is the stage of implementation of developments, the stage of commercialization is the final fourth stage – from the moment of launching into production, entering to the market till stagnation of the product. In the innovation process, from the point of view of the researcher A.A. Trifilova the following main stages are distinguished (Trifilova A.A., 2005): fundamental researches; scientifically-research works; R&D; commercialization and production phase; sale of goods, also of licenses and patents; and the final stage is the completion of the innovation.

Trifilova A.A., in comparison with Morozov Yu.P., associates the commercialization process with the life cycle of a product to the least extent. Thus, considering the process of commercialization according to Yu.P. Morozov and A.A. Trifilova, the following scheme was developed by the authors (Figure 1):

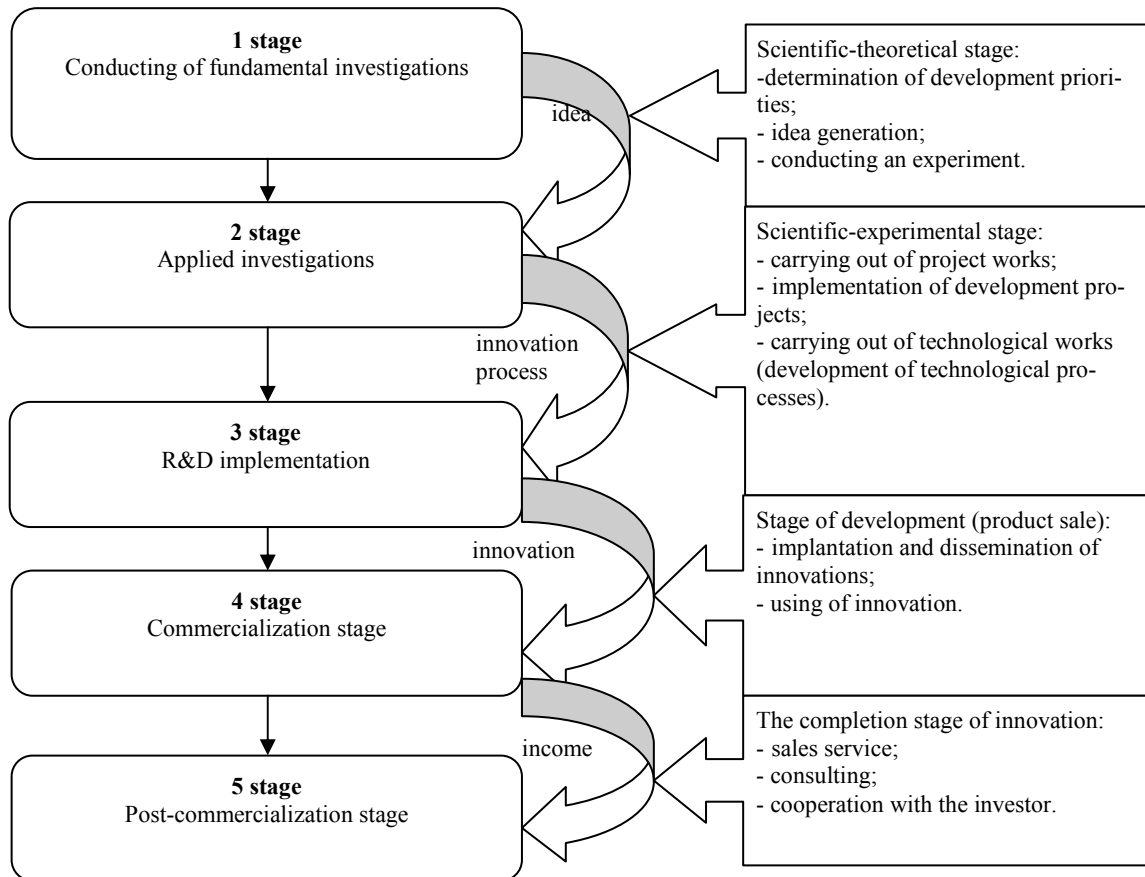


Figure 1. The process of innovation commercialization

Note – compiled by the authors on the basis of source (Trifilova A.A., 2005)

Studying the issues of innovation commercialization, it is important from the beginning of the innovation life cycle to analyze and record data, obtained as a result of fundamental researches. At the same time, the results of the analysis of the innovation commercialization can have an impact on the further process of introducing innovations, which can lead to timely rejection of it.

According to the author Mamrayeva D.G., the innovation commercialization model includes four important blocks: analysis of fundamental researches; analysis of applied researches; analysis of marketing researches; analysis of the results of innovation implementation (Figure 2).

The first stage of the innovations commercialization model has the following characteristics:

- conducting a technological audit of the innovation;
- intermediate conducting of investment risks;
- analysis of profitability and level of commercialization.

The following types of work are typical for the second stage of innovations commercialization:

- carrying out of examination of applied, exploratory researches;
- assessment and monitoring of investment risks;
- carrying out of the analysis effectiveness and commercialization degree.

At the third stage "Analysis of marketing researches", the analysis of information received on the basis of design and project work is being performed in three main areas: 1. monitoring and assessment of investment risks; 2. marketing researches of product sales markets; 3. analysis of the products competitiveness.

In order to determine the effectiveness of the commercialization model used at the fourth stage, it is necessary to conduct such types of work as: marketing researches of the implemented innovation product;

evaluating and determining of the effectiveness level of the business plan implementation, written at the stage of development work; monitoring the degree of innovations commercialization.

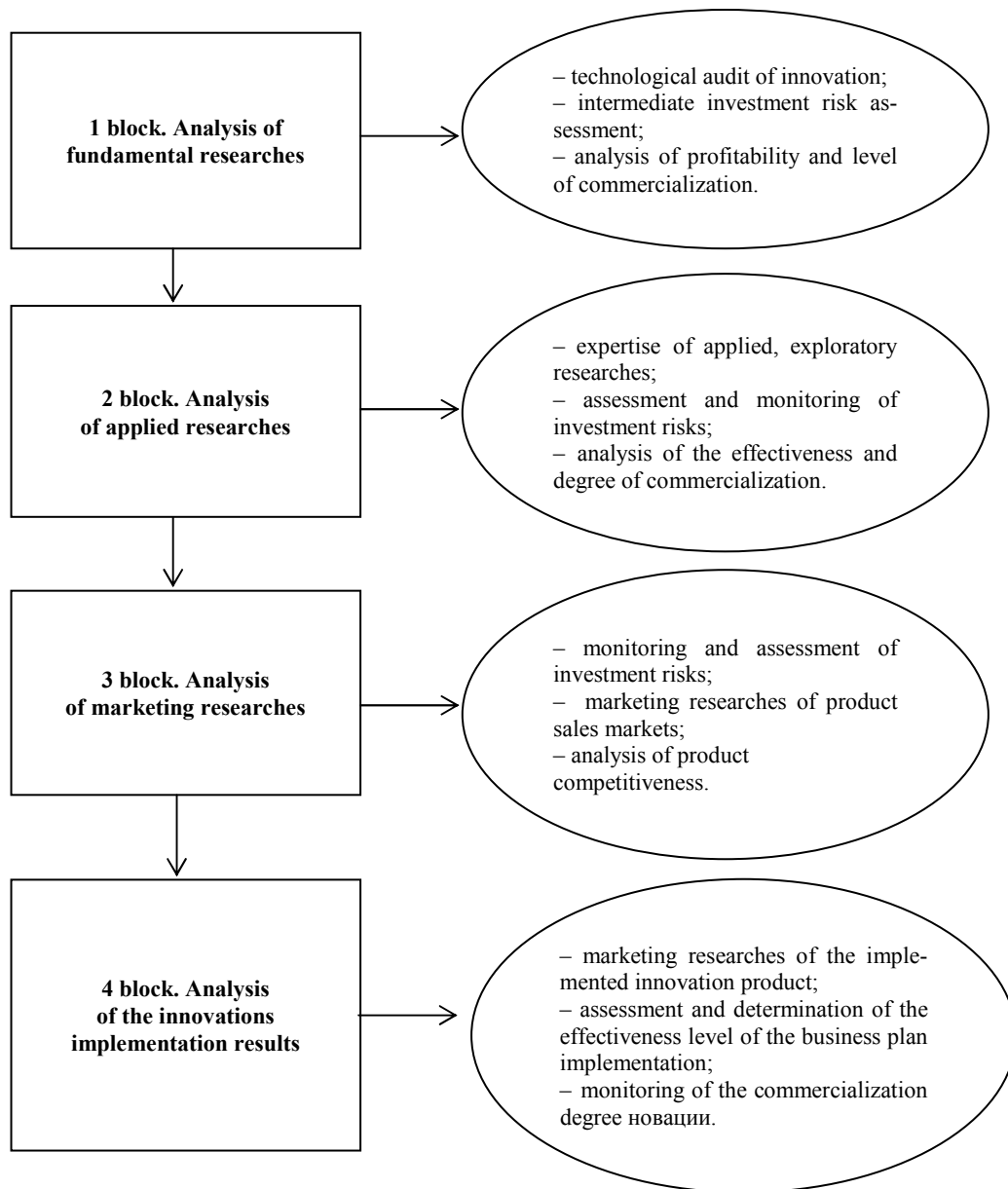


Figure 2. The model of innovations commercialization, proposed by D.G. Mamrayeva

Note – compiled by the authors on the basis of source (Mamrayeva D.G., 2017)

In order to conduct a comprehensive analysis of the degree of product commercialization, it is necessary to take into account the criteria for the degree of innovation commercialization, which are divided into external (market needs and its conjuncture, the presence of competitors, effective demand, consumer needs, competitive products, market capacity, its growth rate, etc.) and internal (values of economic and social efficiency of innovation; innovative potential of the enterprise; the volume of funds directed to R&D; the level of personnel innovation activity; personnel proportion, the coefficient of property involved in R&D; necessary companies' resources for implementation of the innovation project, etc.) (Mamrayeva D.G., 2017).

Based on the conducted research, that reveals the essence of the commercialization process, the following scheme for innovations commercialization compiled by the authors (Figure 3).

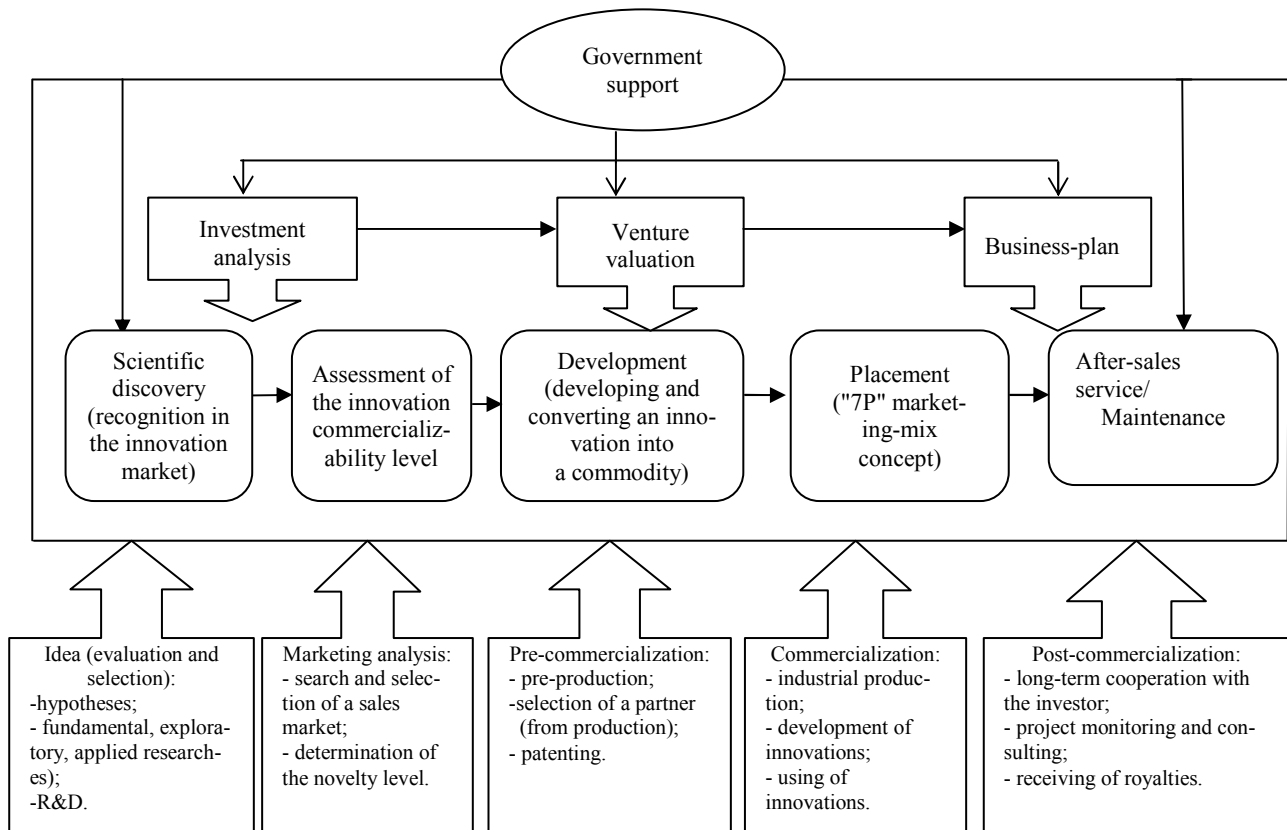


Figure 3. Scheme of innovations commercialization

Note – compiled by the authors on the basis of source (Mamrayeva D.G., 2017)

As shown in Figure 3, the process of innovations commercialization consists of a number of scientific and organizational, financial, technological, commercial activities that contribute to the creation of innovation.

Commercialization is a process that involves the actual using of research and development results aimed at bringing to market new, better modernized products, services or processes with a commercial effect. Usually this process begins at the stage of scientific discovery, that is, in the process of evaluating and selecting of idea, search for an investor. After that, research and development work (R&D) is carried out, which have the following characteristics:

1) aimed at obtaining and using of new knowledge, including exploratory, applied scientific researches directed to implementing of new knowledge for achieving of practical goals and solve specific problems. These works have an experimental and theoretical character, because they have the goal to get more new knowledge regarding the trends in the functioning and development of man and society as a whole;

2) directed to the implementation of new knowledge necessary to solve of technological, engineering, socio-economic and other problems, which contributes to the functioning of science, technology and production as a whole;

3) based on knowledge obtained as a result of scientific researches, including experimental developments. The information obtained on the basis of practical experience is aimed at preserving human life and health, creating new materials, products, processes, devices, services, systems or methods and their further improvement (Lukash Yu.A., 2004).

At the next stage – the innovation development and its transformation into a product – an analysis of marketing research, connected with the search and selection of markets for goods is carried out, preparatory works for the production process. At this stage, it is important to clearly identify possible risk factors, threats, also the strengths and capabilities of the final product. Innovative production structures needs either in start-up capital or investment support for the development of new high technologies, which can be solved with the participation of various investors with state support. For an innovative structure of production character requires initial capital or investment support from both the state and private investors in order to further application of a new advanced technologies, which determines the relevance of the participation of various state-

supported investors. In other words, public authorities create conditions for a scientific researches with financial support in conjunction with private investors.

The production of products and its further sale are typical for the placement stage, with using the «7P» marketing-mix concept – of a wide range of marketing tools based on an integrated marketing approach. This is all detailed in a business-plan, i.e., a document that describes all aspects of the company's activities that are important for investors and partners. As an investor can be various industrial companies of certain industries, interested in further using of the commercialization product in the production process.

In other words, commercialization as the process of bringing a product-innovation to the market includes the following stages (Rodina G.E., Ochekovskaya L.P., 2015):

1) the first stage is associated with the assessment and selection of the most profitable innovative ideas and products for bringing them to the market. This process is accompanied by conducting an expert examination of such indicators as: the potential of a product-innovation, its demand in the market, including in a certain market segment – a potential buyer, economic profitability during the sale of products, as well as the payback period, net present value, rate of return, and etc.;

2) within the framework of the enterprise's innovation policy, the second stage is characterized by conducting of marketing researches, aimed at identifying of the prospects for product development-innovation. These researches are characterized by the collection, processing and analysis of information about the internal and external environment of the enterprise with the further development of the necessary recommendations, proposals in the framework of the implementation of effective strategic and tactical management decisions;

3) within the framework of the third stage of the commercialization process, the financial resources are formed, necessary for the implementation of innovative ideas. The main task of enterprises at this stage is to attract investors, whose funds will be directed to the innovative development of the enterprise, the creation of innovation with the assignment of rights to it and distribution among all participants of the process;

4) the final stage of commercialization – the fourth, is characterized by such features as the organization of the production process of innovative products with their subsequent implementation, then the inculcation of this product into the production process.

There are three main participants in the process of innovations commercialization: inventor, manager, and investor, each of them meant to fulfill his role in implementing the company's innovation policy. By the inventor can be a researcher in a scientific organization or a free inventor performing the functions of the technical author of the project. Employees of the commercialization Center who are intermediaries between the author and the external environment can be project managers. This category of participants has knowledge, experience and skills in the field of generating and receivings of a profit. Because managers who only have a general idea about the technical idea of the inventor, they are not able to understand the main features of the profit-making technology, their primary task is to build a profitable business process for all project participants aimed at generating cash flow.

An investor can be a person, a group of persons, or a separate organization (venture or other fund). This category of participants is very important for the project, because thanks to his financial support, the implementation of its main tasks is carried out. The implementation of the main functions of investors occurs through technical, economic, financial expertise, by attracting consultants forming recommendations about the need to invest in the project based on a detailed analysis.

Based on the foregoing, it should be pointed out that all persons involved in the project of R&D results commercialization play an important role, and all of them are necessary for its successful implementation (Varenik V.A., 2012).

There are two categories of participants involved by the commercialization of innovative products: developers and buyers of innovations. It is also worth noting another important participant in this process, acting as centers for transfer and commercialization of innovations, innovation centers, various consulting companies, business-incubators that performing intermediary functions between innovations developers and their buyers (Shchetinina E.D., Ovcharova N.V., 2015).

In the Republic of Kazakhstan, the technology transfer network is represented by six national and international technology transfer networks:

1. Russian technology transfer network;
2. Republican center of technologies transfer (Republic of Belarus);
3. The national network of technologies transfer (Ukraine);
4. The American stock exchange innovation Yet2Com;

5. The European market of technologies transfer;
6. Database of UNIDO.

Recently, the Kazakh-French center for technology transfer and the Korean-Kazakh center of technological cooperation (further – the Center) have also been operating, their activities are aimed at ensuring cooperation between companies and research institutions in Kazakhstan and South Korea, Kazakhstan and France, also selecting of investors, partners and technologies. These Centers coordinate joint scientifically-research and innovation projects by organizing joint programs for training and development of personnel in the field of creating innovations and supporting joint innovation initiatives.

According to the Decree of the Republic of Kazakhstan Government № 959 dated 23.12.2019, JSC "Center of engineering and technologies transfer" is included in the list of the national development institutions in the field of technological development. The center performs the following functions:

- Unified coordinator of the innovation ecosystem;
- providing of the innovative grants;
- rendering of services of the national innovation system institutions.

Today, in the process of innovations commercialization, an important point is to choose of the method of commercialization, which can be expressed in the form of independent using; assignment of part of the rights to innovation; or full transfer of rights to innovation.

When implementing of the first method of commercialization, the company needs to generate labor and financial resources, using of which contributes to the successful implementation of innovative products. When applying an effective production management system, it is important that the product is in demand among potential consumers. By placing a bet on the second or third method of commercialization, the company will be able to return the funds spent on innovation and development in a short time.

Основной задачей при реализации способов коммерциализации является определение и расчет доходов и расходов предприятия при коммерциализации инноваций (Таблица 2).

The license sale is accompanied by the “transfer” of a part of the market to the licensee by the enterprise and the receipt of stable income (royalties), the opportunity to promote innovation at the expense of the licensee in new markets. In the case of a full transfer or sale of the rights on innovation, there is a possibility of receiving income equivalent to income from own production. Because the company will lose all rights for using its own developments, the company will need to change the direction of its activities (Lyashin A., 2011).

The main task in the implementation of commercialization methods is to determine and calculate the income and expenses of an enterprise at the innovations commercialization (Table 2).

Table 2. The enterprise incomes and expenses at the innovations commercialization

Commercialization methods	The enterprise incomes	The enterprise expenses
Independent using	Making a profit from: - an innovation sales; - providing of engineering services; - leasing of machinery and equipment.	Implementation of costs for: -organization of the production process; - marketing researches and advertising campaign; - modification or modernization of products.
Assignment of the rights part to innovation	Proceeds from the license sale (lump-sum payment); Payments from the using by the licensee of the patent (royalties). Making a profit from: - a license sales ; - using by the licensee of the patent (royalty).	Implementation of costs for: - modification or modernization of products, if it is not carried out by the licensee; - attracting clients (licensees); - provision of consulting services to the licensee; - protection of patent rights.
Complete transfer of all innovation rights	Proceeds from the patent rights sale (lump-sum payment). Making a profit from: - sale of patent rights (lump-sum payment).	Implementation of costs for: -attraction of the buyer; - assistance to the buyer, protection of his rights.
<i>Note: compiled by the authors on the basis of source (Shpak N., Kniaz S., Myroshchenko N., Kolomiyets O., 2017)</i>		

After analyzing of the table, the matter can be summed up that the company will receive the greatest benefits from the independent implementation of the developed innovative products (i.e. organizing new products or modernizing existing ones). At the same time, this method of commercialization will be expensive, because it will require organizing and maintaining the production process at the enterprise, conducting of marketing activities (including advertising activities).

A relatively small income will be generated by the using of assignment of the rights parts to innovations. Because license buyers will receive only a portion of the profit from all their income, then the costs will be relatively small. Due to the fact that most of the company's expenses are related to finding and attracting customers, the company must have additional reserves to search for foreign customers in case of a shortage in their country.

The potential profit in the course of the independent innovation implementation (excluding leasing and engineering services) can be calculated using the formula (Tikhonov N.A., 2012):

$$P_{T1} = \sum_{t=ti}^{tf} V_t \times \Delta P_t \times K_{dt} \quad (1)$$

where: P_{T1} – is the potential profit from the goods and services sales of own production for the period T, expressed in monetary units;

V_t – is the volume of products sales per year t, expressed in grands;

ΔP_t – is the expected profit from the sale of a unit of product in t year, expressed in monetary units;

K_{dt} – discount coefficient in t year;

ti and tf - initial and final years of the settlement period T.

Profit in the event of the assignment of the rights part or their complete transfer is calculated as follows:

$$P_{T2} = S \times \sum_{t=ti}^{tf} V_t \times \Delta P_t \times K_{dt} \quad (2)$$

where: P_{T2} – is the potential profit from the licenses or patents sales for the period T (including leasing, franchising, engineering services), in monetary units;

S – is the share of the copyright holder in the buyer's profit of the patent or license, in %.

If $P_{T1} > P_{T2}$, then for the enterprise the best option would be independent using of the developed innovation, but if $P_{T1} < P_{T2}$, then it is more profitable to sell licenses, patents for innovation.

Discussions

Many authors identify the concept of "innovations commercialization" with the concept of "innovation process", linking it with the stage of the innovation process, from the beginning with the start of production and ending with the decline of the product lifecycle. Until now, there is no single definition of the concept of "innovations commercialization", "process of commercialization". In other words, there are some shortcomings that are still not fully disclosed in the framework of the theoretical approach.

Because the innovations development is an expensive and risky process, there are difficulties associated with financing and state support for the innovations development. In the article an attempt to schematically display the commercialization process is made, in which the state and venture capital play an important role. In other words, today it is important to create the necessary conditions for research and development by the public authorities, providing financial support together with private investors.

In order to ensure the successful implementation of an innovation, should pay attention to the commercialization process at an earlier stages, starting from the fundamental researches, identifying opportunities for innovation commercialization at all stages of its creation.

Each side of the innovation commercialization project plays an important role. The activities of the three parties mentioned in the article should have formal relations and restrictions if there is a project implementation program. At the same time, due attention should be paid to the functioning of the Centers of commercialization, which are designed to provide consulting services (consultations) to all participating parties.

In the future, will be studied the features of the commercialization process, typical for Kazakhstan's innovation system, an organizational and economic model of the innovation commercialization process will be developed.

Conclusions

In conclusion, it should be noted that the innovations commercialization as a process is characterized by quite complex phenomena associated with the development and implementation of preparatory measures of a scientific, technical, financial and marketing nature. At the same time, it is important to assess the potential risks of the project. Successful implementation and ensuring of an effective management of the innovations

commercialization process contributes to the creation of favorable conditions for the developer of innovation and the state as a whole (Barinova N., Nazarova T., 2018).

Commercialization as a key element of the innovation process, aims to create basic conditions for the successful implementation of innovation and effective commercialization of innovation. Enterprises should focus on choosing of the method of its implementation, because it is the basis for improving of the competitiveness of the product and the profitability of the enterprise as a whole.

To consider the process of innovations commercialization in a terms of the sequence of its stages, from the moment of turning a scientific idea into an innovative product brought to the consumer, contributes to a step-by-step analysis of the results of this process. A theoretical approach to the process of innovations commercialization from the point of view of an investment project helps to take into account possible financial risks, estimating of the required funding amount, and, if necessary, apply measures related to minimizing financial losses.

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Инновацияларды коммерцияландыру процесін зерттеудің теориялық аспектілері

Аңдатпа:

Мақсаты: Теориялық және әдіснамалық аспектілерді, сондай-ақ инновацияларды коммерцияландыру процесін басқару тетіктерін қарастыру.

Әдісі: Мақалада жүйелік және құрылымдық талдау, соның ішінде зерттелетін ғылыми мәселелерді жан-жақты қарастыруға мүмкіндік беретін, сондай-ақ зерттелетін зерттеу объектісінің мәні мен ерекшелігін толық ашатын қорытынды жасау әдістері қолданылды.

Қорытынды: Мақалада инновацияларды коммерцияландыру теориясындағы заманауи үрдістер қарастырылды, инновацияларды коммерцияландыру саласындағы ұғымдық аппарат зерделенді; инновацияларды коммерцияландыру процесі зерттелді, оның қатысушыларының өзара байланысы анықталды, оны жүзеге асыру тәсілдері айқындалды; инновациялық процестің кезеңдері мен фазалары нақтыланды.

Тұжырымдама: Ұсынылған ғылыми мақалада инновацияны коммерцияландыру, инновациялық процесс ұғымдары, оны жүзеге асыру кезеңдері зерттелген. Мақалада инновациялық процестің негізгі фазалары мен кезеңдері сипатталған, инновацияларды коммерцияландыру моделі, сондай-ақ оны сәтті жүзеге асыру дәрежесінің критерийлері талданған. Инновацияларды коммерцияландыру әдістері сипатталды, қазіргі кездегі ең өзекті, белгілі бір кезеңдегі әлеуетті пайда, инновацияларды коммерцияландыру процесін сәтті жүзеге асырған кезде кәсіпорынның кірістері мен шығыстарының негізгі баптары ұсынылды. Инновациялық өнімді коммерцияландырудың белгілі бір кезеңіндегі әлеуетті пайданы есептеу формулалары көрсетілген. Шетелдік

және отандық зерттеушілердің, авторлардың талданған ғылыми зерттеулерінде қазіргі экономикалық даму, әлем елдерінің бірқатар экономикаларын цифрлық және инновациялық құрамдас бөліктерге қайта құру жағдайында, коммерцияландыру инновациялық қызмет нәтижелерін табысты енгізудің маңызды компоненттерінің бірі болып табылады, сондықтан бұл процесті компаниялардың ҒЗТҚЖ саласындағы қызметінің құрылымында іргелі зерттеулер жүргізген сәттен бастап ертерек кезеңдерде жүзеге асырған жөн.

Кілт сөздер: инновациялар, инновацияларды коммерцияландыру процесі, инновациялық қызмет кезеңдері, инновациялық жоба, нәтижелерді коммерцияландыру, ҒЗТҚЖ, инновацияларды коммерцияландыру тетігі, инновацияларды коммерцияландыру схемасы.

Д.Г. Мамраева, А.Б. Токсамбаева, Г.Б. Мамраева, Л.А. Родина

Теоретические аспекты изучения процесса коммерциализации инноваций

Аннотация

Цель: Рассмотреть теоретико-методологические аспекты, а также механизмы управления процессом коммерциализации инноваций.

Методы: В статье использованы методы системного и структурного анализа, позволяющие рассматривать исследуемую в статье научную проблематику комплексно, а также делать выводы, полно раскрывающие сущность и специфику изучаемого объекта исследования.

Результаты: В статье изучены современные тенденции в теории коммерциализации инноваций, понятийный аппарат в области коммерциализации инноваций; исследован процесс коммерциализации инноваций, установлена взаимосвязь его участников, определены способы его осуществления; конкретизированы этапы и фазы инновационного процесса.

Выводы: В статье исследовано понятие коммерциализации инноваций, инновационного процесса, этапы его осуществления. Описаны основные фазы и стадии инновационного процесса, проанализирована модель коммерциализации инноваций, а также критерии степени ее успешного осуществления. Охарактеризованы способы коммерциализации инноваций, наиболее актуальные на сегодняшний день, представлены потенциальная прибыль за определенный период, основные статьи доходов и расходов предприятия при успешной реализации процесса коммерциализации инноваций. Отражены формулы расчета потенциальной прибыли за определенный период коммерциализации инновационного продукта. В проанализированных научных исследованиях зарубежных и отечественных исследователей, авторами сделан вывод о том, что в условиях современного экономического развития, перестройки ряда экономик стран мира на цифровую и инновационную составляющие, коммерциализация служит одной из важнейших компонентов успешного внедрения результатов инновационной деятельности, поэтому целесообразно осуществлять данный процесс на более ранних этапах, начиная с момента проведения фундаментальных исследований компаниями в структуре их деятельности в сфере НИОКР.

Ключевые слова: инновации, процесс коммерциализации инноваций, этапы инновационной деятельности, инновационный проект, коммерциализация результатов, НИОКР, механизм коммерциализации нововведений, схема коммерциализации инноваций.

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Analysis of the current state of production activity of the "Izhevsky" production cooperative of Akmola region

Abstract

Object: One of the most dynamically developing industries in the modern system of the agro-industrial complex of Kazakhstan is poultry farming. Today, it is crucial to stimulate the efficient production of high-quality poultry products. The article provides an economic overview of the production activities of the production cooperative "Izhevsk" of Akmola region, qualitatively and quantitatively considers the current state of production at this enterprise.

Methods: The following methods of research used during the work: methods of systemic, logical and comparative analysis, statistical methods. The information and empirical basis of the study were the data of the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan, the Department of Agriculture of the Akmola region, statistical reports of the Izhevsk production cooperative, as well as reference and regulatory materials, scientific and methodological recommendations, economic periodicals, and the information potential of the Internet.

Findings: The current state of the poultry industry of Akmola region briefly reviewed, the leading economic indicators of production activity of Izhevsk production cooperative were analyzed. It should be noted that the proposals made by the authors can be used by agricultural producers, district and regional agricultural departments.

Conclusions: The main conclusions drawn from the calculations can be used in the development of strategic plans for the development of poultry farming in the region.

Keywords: agriculture, poultry, animal husbandry, laying chickens, poultry, feeding, combined feed, poultry productivity.

Introduction

Within the framework of the agro-industrial sophisticated development program in the Republic of Kazakhstan "Agrobusiness 2020" for 2013-2020, the State Program for the development of the agro-industrial complex of the Republic of Kazakhstan for 2017-2021 and the producers of products are tasked with producing high-quality agricultural products with minimal damage to the ecology and environment. The development of poultry farming as one of the strategic sectors of animal husbandry in Kazakhstan is of great importance (Agro-industrial complex development program in the Republic of Kazakhstan for 2013-2020 "Agribusiness-2020).

Poultry farming is the most dynamic and knowledge-intensive industry in the world and domestic agro-industrial complex (State programme for the development of the agro-industrial complex of the Republic of Kazakhstan for 2017-2021).

In the world structure of meat of all types of animals, poultry occupies a WTO place after pork. According to the UN FAO, the annual increase in meat in 2011-2025 will be: for poultry - 3.1%, pork - 2.6, beef - 1.3, and other animal species - 0.2%. The leading countries in poultry meat production are the United States, China, Brazil and Russia.

Egg of hens contains all nutrients and biologically active substances necessary for humans, which are in optimal ratio: 12-15% protein, 11-15% fat, 1% carbohydrates, 74% water, and about 1% inorganic substances. The biological value of poultry egg proteins is due to the set and ratio of essential amino acids absorbed by humans by 96-98%. The egg contains more than 20 minerals, vitamins, and essential amino acid - lyszyme. The nutritional value of a chicken egg is about 75 calories (Ahearn, M., El-Osta, H., 2016).

The highest quality meat is obtained from broilers - hybrid meat young of all types of poultry with specialized cultivation. Broiler white meat contains over 20% of full proteins, 1-2% of fat, 92% of amino acids.

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Therefore, with a limited feed base, the production of this meat is rapidly developing in the vast majority of countries (Bollman, R.D., Kapitani, M., 2017).

Poultry by-products are widely used. Feather and fluff go to the manufacture of various household supplies, fishing gear, and feed. Raw poultry litter is an organic fertilizer that is valuable in the composition and degree of nutrient absorption by plants. Incubation and slaughter wastes are processed into fodder flour (Summer, D.A., 1982).

At the current level, in the poultry industry, the efficiency and safety of products become vital concepts. At the same time, the requirements for the main link of the poultry production system are changing - agricultural poultry, which should have the main properties - this is a developed immune system and functional adaptation to intensive technologies for the production of eggs and poultry meat; high reproducibility and long productive life; the ability to produce products of high quality and nutritional value; efficient conversion of nutrients and feed energy (Usher, D., 1980).

The achievement of these goals is possible with a comprehensive approach and systematic coordination of geneticists and breeders, animal scientists, and veterinary specialists of a comprehensive profile (Sigarev, M.I., Nurkuzhaev, Zh.M., & Alshembaeva, L.T., 2020).

In 2018, there were 60 poultry farms in the Republic of Kazakhstan. In the egg direction, Kazakhstan fully provides the domestic market; more than 179 thousand tons of poultry meat was produced.

Today, the Kazakhstan market's demand for poultry meat is about 250-300 thousand tons, of which domestic products occupy only half of the market.

Currently, the poultry industry belongs to one of the most promising sectors of the agro-industrial complex of the Akmola region, which is due to a whole range of factors of both a general economic and specific regional nature. At the same time, the efficiency of individual poultry enterprises, especially those specializing in poultry meat production, remains low, which requires the development of improved models for evaluating their activities and optimizing their functioning.

In this regard, the authors of the article attempt to prove that conducting a production analysis of the company's activities will help to improve the qualitative and quantitative indicators of the products produced and will increase the financial and economic indicators of the enterprise.

The study hypothesizes that it can be proved that the productive activity of the Izhevsk production cooperative satisfies the population's need for poultry products in the city of Nur-Sultan and the Akmola region.

Literature Review

In the economic literature, various scientific problems of the functioning and development of the poultry production sub-complex of the country and some of its regions are considered, theoretical and methodological approaches to the justification of increasing the economic efficiency of the poultry industry are highlighted. The above aspects of scientific problems were studied in the works of I.A. Bakhtin, L.A. Belova, V.R. Boev, I.N. Buzdalov, E.B. Igumenova, R.A. Grishko, N.V. Denin, V.A. Dobrynin, M.M. Zhigalin, S. Noorani, D. Bhattarai, S.O. Omondi, E. Hirwa.

E.B. Igumenova in her work justifies that industrial poultry farming is one of the few specialized industries of the agro-industrial complex that can produce products in significant volumes and in a short time regardless of the season of the year (Igumenova, E.B., 2012).

In the findings of R.A. Grishko is confirmed that in today's circumstances, new theoretical and practical approaches to the development of this unique industry are needed in order to quickly saturate the market with high-quality dietary foods with minimal production costs (Grishko, R.A., 1995).

D. Bhattarai believes that "Poultry is one of the fastest-growing segments of the agricultural economy, particularly in developing countries. By using different econometric models, this study estimated the production efficiency and effectiveness of poultry farming" (Bhattarai D., 2016).

Emmanuel Hirwa identifies that today, in emerging economies, the poultry subsector has become known as a means of sustaining livelihoods, reducing poverty and malnutrition (Hirwa, E., 2018).

An essential place in the work of scientist S.O. Omondi is given to the economic analysis of small-scale poultry production, where urban local chicken production has a dual role in providing food and income generation. His study argues that the importance of urban agriculture depends on the type of agricultural practice in cities (Omondi, S.O., 2018).

However, there is no comprehensive scientific approach to the study of the formation of market relations, the development of the organizational and economic mechanism of management, the improvement of the management of poultry enterprises, the organization of financial and innovative management in intensive

poultry farming, as well as the development of a system of measures to increase the efficiency of the development of the poultry industry at the regional level concerning Akmola region. This region remains little studied; therefore, it represents a particular scientific value. Many theoretical and methodological recommendations require clarification, taking into account the region's specific organizational and economic conditions.

Methods

Statistics from the company's official website, as well as materials provided by the company's management, were used to assess the state of production activities of the Izhevsky production cooperative. For the analysis of the industry, in general, statistical journals, reports, bulletins, articles by scientists involved in these studies. In the process of performing the work, the following research methods were used: - abstract-logical - to substantiate the goal, tasks, working hypothesis and priority areas of poultry development; generalizations of methodological approaches to the assessment of the level of poultry development; - economic and statistical - in the study of the current state and main trends, - graphic - in the graphical presentation of statistical data; - monographic - in the study and synthesis of domestic and foreign experience in poultry development. Microsoft Word, Microsoft Excel applications were used in the processing of statistical material and the design of work.

Results

Considering the Izhevsky production cooperative, we can distinguish this is a multisectoral agricultural enterprise. It is located in the Republic of Kazakhstan, Akmola region, Arshalinsky district, the village of Izhevsky.

Main areas of activity:

- egg production
- grain production (there is the status of an elite seed and seed-and-crop economy)
- poultry meat production
- dairy husbandry
- horse breeding
- processing of agricultural products.

The Izhevsky production cooperative produces milk, poultry meat, cattle meat, horse meat, sausages, smoked and dairy products, egg products, flour, pasta, bakery products, and other products. In total, more than 70 names. These products are delivered daily to the outlets of Nur-Sultan, as well as other cities of Kazakhstan and Russia. The total annual production of agricultural products is 180 million pieces of chicken eggs, 900 tons of milk, 530 tons of poultry meat, 27,000 tons of cereals. The land of the farm is 21,462 hectares, including 15,296 hectares of arable land [5]. We evaluated the production activities of the Izhevsky poultry farm, which is presented in Table 1.

Table 1 Analysis of the poultry farm "Izhevsky"

№	Indicators	Unit of measure	Years			Deviations 2019/2017	
			2017	2018	2019	+,-	%
1	Number of poultry houses of all chickens	units	26	32	32	6	23,08
2	Number of poultry houses of all laying hens	units	22	26	26	+4	18,19
3	Number of poultry houses of all young chickens	units	4	6	6	+2	50
4	Number of laying hens in each poultry house	pieces	31701	52 576	44 571	+12 870	40,6
5	In fact, the number of all laying chickens	pieces	824 226	977 827	1 035 092	210 866	25,59
6	Number of all young chickens	pieces	370 200	495 955	427 511	57 311	15,49
7	Number of young chickens in each poultry house	pieces	92 550	82 659	71 252	-21 298	-23,02

Note - compiled on the basis of the Izhevsky production cooperative data (<http://ijevski.kz>)

Based on Table 1 it can be seen that poultry houses grew by 6 units or 23.08% and in 2018 there were 32 units of the Izhevsky production cooperative, while poultry houses for young chickens were opened, so in 2017 - 2 units, 2018/2019 they amounted to 4 units.

When evaluating the production activities of the Izhevsky production cooperative, we studied the production of laying chickens and young chickens, which are considered in Table 2.

Table 2 Analysis of the number of chickens in pieces and specific gravity of the total number of chickens at the Izhevsky poultry farm, pieces

№	Indicators	Years						Deviations 2019/2017	
		2017		2018		2019		+,-	%
		units	%	units	%	units	%		
1	Number of total bearing chickens	824 226	69	977 827	67	1 035 092	71	210 866	25,6
2	The number of all young chickens,	370 200	31	495 955	33	427 511	29	57 311	15,5
3	Total chickens at the poultry farm	1 194 426	100	1 473 782	100	1 462 603	100	+268 177	+22,46

Note - compiled on the basis of the Izhevsky production cooperative data (<http://ijevski.kz>)

Having estimated the number of chickens at the Izhevsky poultry farm, it might be seen that the number of chickens from 2017 to 2019 has increased, see table 2:

- the number of chickens per 22.46% or 268,177 pieces in a poultry farm and 2019 year - 1,462 603 pieces;
- the number of laying hens by 25.6% or by 210,866 pieces and in 2019 - 1,035092 pieces is more than in 2018 than by 52,265 pieces or 5.9%;
- numbers of young chickens - 15.5% and amounted to in 2019 - 427,511 units.

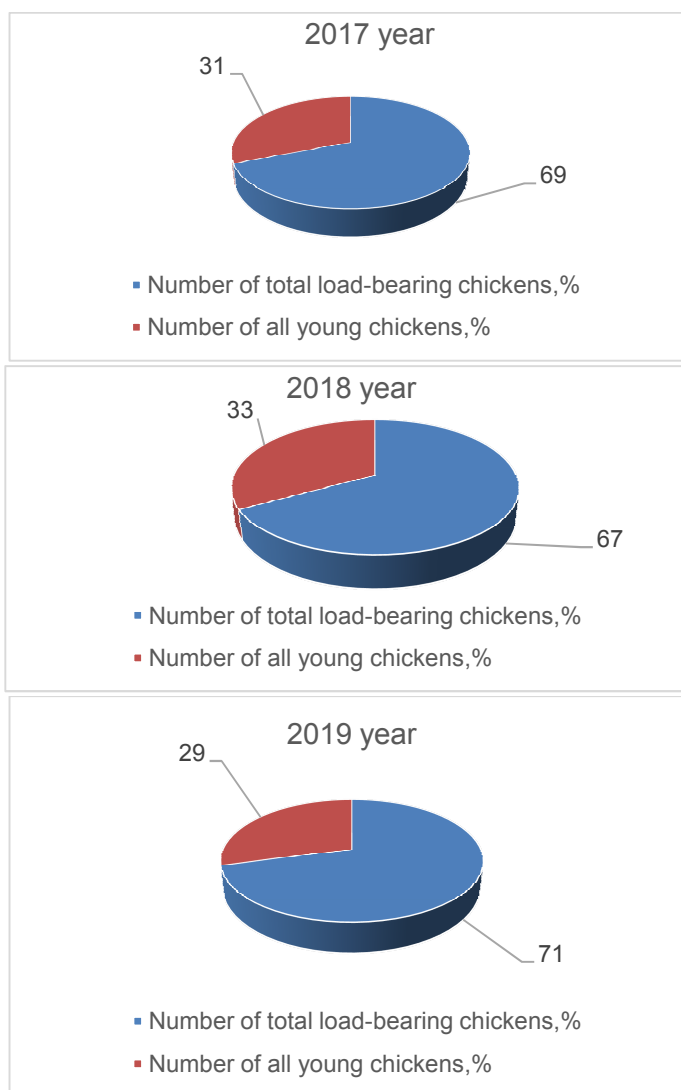


Figure 1 - 3 - Specific weights of bearing hens and young hens in the total structure of the number of all hens of the Izhevsky production cooperative for individual years 2017, 2018, 2019.

Note - compiled by the authors on the basis of the source (<http://ijevski.kz>).

Based on Figures 1-3 of specific weights of laying hens and young hens in the whole structure of the number of all hens of the Izhevsky production cooperative according to individual 2017, 2018, 2019 and Tables 2, it can be seen that the specific gravity of bearing hens increased over three years by 2% and amounted to 71%. The proportion of young chickens in the total number of chickens at the poultry farm decreased by 2% and is 29% in 2018, and this indicates an increase in the number of laying hens compared to young people by 2%.

Table 3 Analysis of the average number of laying hens and young hens in one poultry house of the Izhevsky production cooperative, pieces.

№	Indicators	Years			Deviations 2019/2017	
		2017	2018	2019	+,-	%
1	Average number of laying hens in each poultry house	37 465	37 609	39 811	+2346	6,27
2	Average number of young chickens in each poultry house	92 550	82 659	71 252	-21 298	-23,02

Note - compiled on the basis of the Izhevsky production cooperative data (<http://ijevski.kz>)

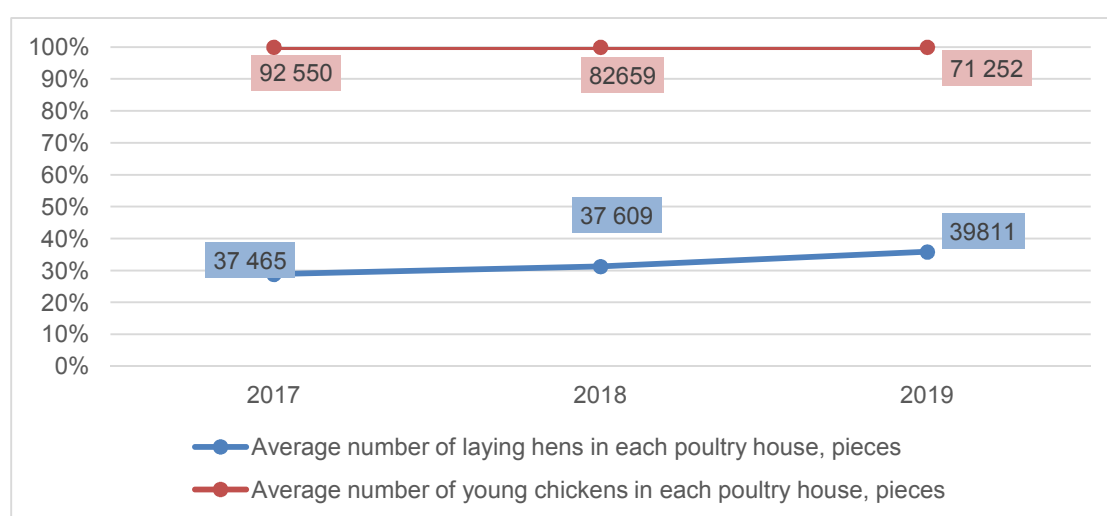


Figure 4 - The average number of laying hens and young hens in one poultry house of the Izhevsky production cooperative, pieces.

Note - compiled by the authors on the basis of the source (<http://ijevski.kz>).

Table 3 and figure 4 show that the average number of laying hens in each poultry house is growing from year to year and their growth for the period under review was 6.27% or + 2346 pieces, while in 2019 - 39,811 pieces, which is 5.86% higher compared to the previous year 2018.

The average number of young chickens in each poultry house was decreased over the period (2017-2019) by 23.02% or 21,298 units and amounted to 71,252 units in 2019.

Table 4 Egg production at the Izhevsky poultry farm.

№	Indicators	Unit of measure	Years			Deviations			
			2017	2018	2019	2019/2017		2019/2018	
						+,-	%	+,-	%
1	Egg production in poultry houses for the year	thousand units	280 035	305 705	308 457	28 422	10,15	2 752	1
2	Egg production on average for each poultry house	thousand units	12 728,87	11 757,89	11 863,73	- 865,14	-6,8	105,84	1
3	Production of eggs by 1 chicken carrier per year	pieces	340	313	298	-42	-12,36	-15	-4,8
4	Production of eggs 1 chicken carrier per month	pieces	28	26	25	-3	-10,72	-1	4
5	Production of eggs 1 chicken carrier per week	pieces	7	7-6	7	-1	-14,29	-	-

Note - compiled on the basis of the Izhevsky production cooperative data (<http://ijevski.kz>)

Analyzing the production of eggs at the Izhevsky poultry farm shows that, in general, the factory experienced an increase in egg production from 2017 to 2019 by 10.1% and amounted to 308 57 thousand units in 2018.

If we consider egg production on average for each poultry house, then there was a decrease of -6.8% over three years, but this decrease is due to an increase in the number of poultry hens from 22 units to 26 units, i.e., by four units in 2018-2019, which made it possible to distribute poultry hens to additional poultry houses

Table 5 Production of meat chicken products in the Izhevsky production cooperative, tons

№	Indicators	Years			Deviations			
		2017	2018	2019	2019/2018		2019/2017	
					+,-	%	+,-	%
1	Chicken meat production for the year	798	801	956	+155	+19,35	+158	+20,0
2	Chicken meat production per poultry house per year	36,28	30,81	36,77	+0,498	1,35	+0,49	1,35
3	Total monthly production of chicken meat	3,08	2,57	3,07	0,5	19,46	0,02	0,33
4	Average daily production of chicken meat - total	0,16	0,13	0,16	0,03	23,08	-	-

Note - compiled on the basis of the Izhevsky production cooperative data (<http://ijevski.kz>)

By studying the production of chicken meat in the Izhevsky production cooperative, actual data can be reviewed, which show that the production of these products for 2017-2019 increased by 20% or + 158 tons and in 2019 - 956 tons. If we make comparisons with the previous year 2019/2018, it is clear that volume growth amounted to 155 tons, which is 19.35% higher.

All output indicators, according to Table 5 and Figure 5 show dynamic growth, as follows:

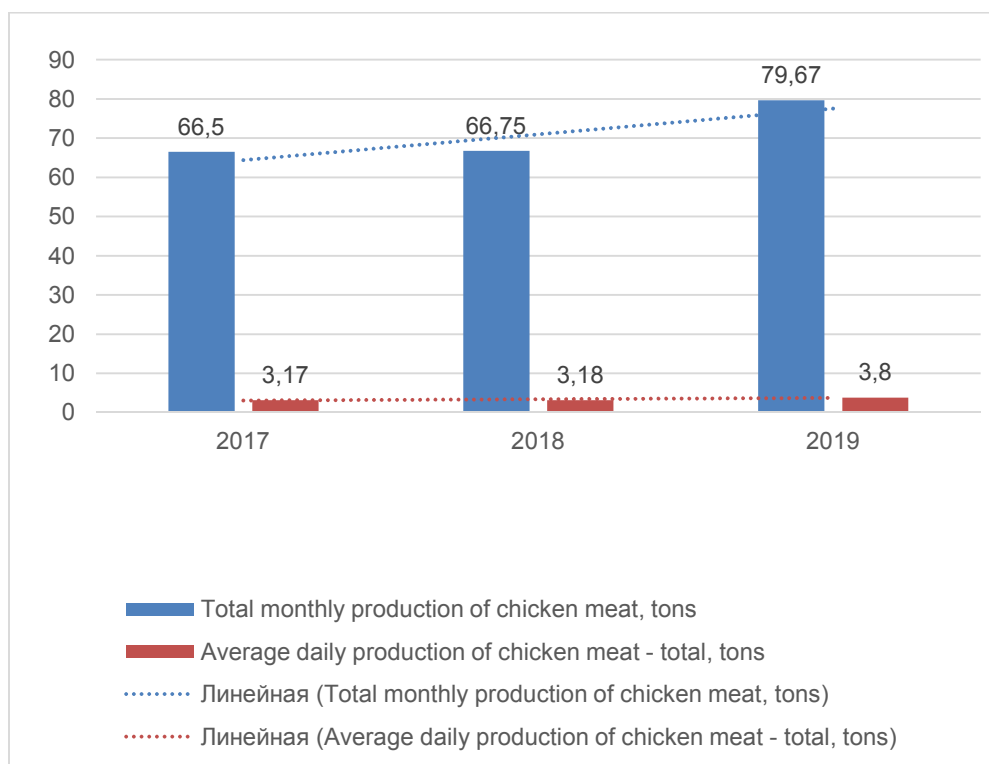


Figure 5 - Average monthly and average daily production of chicken meat in general at the Izhevsky poultry farm.

Note - compiled by the authors on the basis of the source (<http://ijevski.kz>).

- the production of chicken meat for each poultry house increased by + 1.35% in three years, in 2019/2018 years an increase of + 0.49 tons, which amounted to 36.77 tons per year in 2019;
- the average monthly production of chicken meat for the total poultry farm in 2017 amounted to 3.08 tons, in 2018 - 2.57 tons, in 2019 - 3.07 tons, i.e., there was an increase after the installation on 19.46%.
- the average daily production of chicken meat also increased by 23.08% compared to 2018 and amounted to 0.16 tons/day in 2019.

Thus, it can be concluded that all production activities are growing dynamically, and the Izhevsky production cooperative is characterized as an enterprise with sustainable development

Discussions

From 2012 to 2019, the amount of poultry meat per capita is six times higher than in the domestic market. A significant share of the population in the meat market will pose a significant threat to food security, exacerbated by a massive dependence on megacities (Alibaeva, Zh.N., & Traisov, B.B., 2015).

Annually increase the production of commercial poultry enterprises such as the Izhevsky production cooperative, Sarybulak Company LLP, Kazakhstan Bushes LLP, Shymkent Kus LLP, KazherKus LLP, Ural Poultry Farm LLP. Nevertheless, there is a need for a low level of technological equipment, underutilization of production capacities of enterprises, as well as a high cost of production. Broiler production capacity in the republic as a whole is used by 60-70%. According to the standards for the month from egg chickens, you can get from 17 to 26 eggs per week - 4-6 pcs. Meat-egg chickens carry less than 160-180 days a year. Stable - once every two days. A month, universal chicken is quite good: 13-15 pcs (Kimbi, A. & Lee, M., 1996). A week - 3-4 pcs. Egg chickens are record holders in egg production. Small and very mobile, they are selfless workers. Their productivity is in the range of 200-240 eggs. Egg hybrids are higher: 280-320 pcs (Knoeber, C.R., & Thurman, W.N., 1995). In summer, such chickens are carried often, almost daily. In winter - less often. On average, it turns out from one egg per day to one per two days, depending on the year. At the same time, for a month from egg chickens, you can get from 17 to 26 eggs per week - 4-6 pcs. Meat-egg chickens carry less than 160-180 days a year. Stable - once every two days. A month, universal chicken is quite good: 13-15 pcs., And a week - 3-4 pcs (Shevchenko, A.A., Bojchenko, A.A., & Myasoedov, A.Yu., 2020).

Meat carries the worst, but when they were brought out, there were other priorities. The productivity of one such chicken is in the range of 120-160 per year. The eggs of heavyweights are more extensive than those carried by the laying chicken. On average, it turns out that one egg appears once every three days. You can expect 10-13 units per month, 2-3 units per week (Devine, P. J., Jones, R.M., Lee, N., & Tyson, W.J., 1976).

"The monitoring of poultry production prices by the Poultry Union shows that, despite rising feed prices and their component, seasonality, on currency jumps - in 2016 - 340 tenge, in 2017-2018 - 370-380 tenge, in 2019 - 390-410 tenge, untimely and incomplete receipt of subsidies and other production problems, poultry farms have been keeping and not raising prices in good faith, since the beginning of the year, according to some reports, there was an increase in prices for poultry meat by 4%. Thus, the production of a unit of livestock fodder production makes up the most significant part. Their share in poultry production cost, depending on its type, is about 70% (Mothae, N., 1999).

The Izhevsky production cooperative is one of the leading producers of milk, poultry meat, cattle meat, horse meat, sausages, smoked and dairy products, egg products, flour, pasta, bakery products, and other products in Akmola region. In total, more than 70 names. These products are delivered daily to retail outlets in Astana and other cities of Kazakhstan and Russia (Svoya ferma, 2020). The total annual production of agricultural products is 180 million pieces of chicken eggs, 900 tons of milk, 530 tons of poultry meat, 27 000 tons of cereals. The land of the farm is 21 462 hectares, including 15 296 hectares of arable land.

Production activity is steadily growing for the period from 2017 to 2019 as follows:

- the number of poultry houses increased from 26 units to 32 units;
- all in the poultry farm the number of chickens by 22.46% or 268 177 pieces and in 2019 – 1 462 603 pieces;
- the growth of chicken meat from 2019/2018 volumes is 19.35% higher;
- egg production increased in three years by 28 422 thousand units or 10.15%.

The scientific novelty of the study consists in the fact that based on studying the scientific and methodological aspects of the problem under study, the necessary capacities for the production and production of

poultry products of the production cooperative are determined to determine the population's demand for these types of products and meet the need for them.

The practical significance of the study is that the main provisions on the assessment of activities can also be used for practical application by many poultry enterprises in Kazakhstan and will contribute to further improving the efficiency of the industry.

Conclusions

In this study, we analyzed the modern development of poultry farming in Kazakhstan, including the Izhevsky production cooperative of Akmola region (Serikpaev, D., 2020). The Izhevsky production cooperative carries out various activities and produces milk, poultry meat, cattle meat, horse meat, sausages, smoked and dairy products, egg products, flour, pasta, and bakery, and other products. In total, more than 70 names. However, the main activity is the production of eggs and chicken meat. For this, the Izhevsky production cooperative has 32 poultry houses on its balance sheet, in which in 2019, the number of laying hens is 1 035 092 pieces, the number of all young hens – 427 511 pieces. The Izhevsky production cooperative produces 308 457 thousand eggs during the period under review, and 956 tons of chicken meat production per year.

All the production activities of the Izhevsk PC show that it is growing dynamically and is characterized as an enterprise with sustainable production development, which proves the hypothesis set in this study. This is a factor that satisfies the population's need for poultry products in the city of Nur-Sultan and Akmola region, which characterizes the indicator of the physical accessibility of these products to ensure food security in the region (Serikov, D., 2019). The main conclusions drawn from the calculations can be used in the development of strategic plans for the development of poultry farming in the region.

It should be noted that the development of poultry farming in general is one of the most important industries that ensure the sustainable development of agriculture in the country and the region.

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К.С. Мейрамкулова, М.О. Рыспекова, Ш.У. Ниязбекова, А.А. Дуйсенбекова

**Ақмола облысы «Ижевский» өндірістік кооперативінің
өндірістік қызметінің ағымдағы жағдайын талдау**

Аңдатпа:

Мақсаты: Құс шаруашылығы — бұл Қазақстанның агроөнеркәсіптік кешенінің заманауи жүйесінде қарқынды дамып келе жатқан салалардың бірі. Бүгінгі күні жоғары сапалы құс өнімдерін тиімді өндіруді ынталандыру өте маңызды. Мақалада Ақмола облысындағы «Ижевский» өндірістік кооперативінің өндірістік қызметіне экономикалық шолу жасалған, осы кәсіпорындағы өндірістің қазіргі жағдайы сапалы және сандық түрде қарастырылған.

Әдісі: Жұмысты орындау процесінде келесі зерттеу әдістері қолданылды: жүйелік, логикалық және салыстырмалы талдау әдістері, статистикалық әдістер. Зерттеудің ақпараттық-эмпирикалық базасы Қазақстан Республикасы Ұлттық экономика министрлігі Статистика комитетінің, Ақмола облысының ауыл шаруашылығы департаментінің деректері, «Ижевский» өндірістік кооперативінің статистикалық есептілігі, сонымен қатар анықтамалық материалдар, ғылыми-әдістемелік ұсыныстар, экономикалық мерзімді басылымдар, Интернеттің ақпараттық әлеуеті болды.

Қорытынды: Ақмола облысындағы құс шаруашылығының қазіргі жағдайына қысқаша шолу жасалды, «Ижевский» өндірістік кооперативінің өндірістік қызметінің негізгі экономикалық көрсеткіштері талданды. Авторлар жасаған ұсыныстарды ауылшаруашылық тауар өндірушілері, аудандық және облыстық ауылшаруашылық бөлімдері пайдалана алатындығын ескеру қажет.

Тұжырымдама: Есептеулер нәтижесінде тұжырымдалған негізгі тұжырымдар аймақтағы құс шаруашылығын дамытудың стратегиялық жоспарларын құруда қолданылуы мүмкін.

Кілт сөздер: ауыл шаруашылығы, құс шаруашылығы, мал шаруашылығы, тауықтар салу, құс үйі, бордақылау, құрама жем, құс өнімділігі.

К.С. Мейрамкулова, М.О. Рыспекова, Ш.У. Ниязбекова, А.А. Дуйсенбекова

**Анализ современного состояния производственной деятельности
производственного кооператива «Ижевский» Акмолинской области**

Аннотация

Цель: Одной из наиболее динамично развивающихся отраслей в современной системе агропромышленного комплекса Казахстана является птицеводство. На сегодняшний день крайне важны выпуск высококачественной продукции птицеводства и развитие эффективного производства. В статье произведен экономический обзор производственной деятельности производственного кооператива «Ижевский» Акмолинской области, качественно и количественно рассмотрено современное состояние выпуска продукции на данном предприятии.

Методы: В процессе выполнения работы использовались следующие методы исследования: системный, логический и сравнительный анализ и статистические методы. Информационно-эмпирической базой исследования послужили данные Комитета по статистике Министерства национальной экономики Республики Казахстан, Управления сельского хозяйства Акмолинской области, статистической отчетности Производственного кооператива «Ижевский», справочно-нормативные материалы, научно-методические рекомендации, экономические периодические издания, а также информационный потенциал сети Интернет.

Результаты: Проведен краткий обзор современного состояния птицеводческой отрасли Акмолинской области, проанализированы основные экономические показатели производственной деятельности Производственного кооператива «Ижевский». Следует отметить, что предложения, сделанные авторами, могут быть использованы сельскохозяйственными товаропроизводителями, районными и областными управлениями сельского хозяйства.

Выводы: Основные выводы, сформулированные в результате расчетов, могут быть использованы при разработке стратегических планов развития птицеводства в регионе.

Ключевые слова: сельское хозяйство, птицеводство, животноводство, куры-несушки, птичник, кормление, комбикорма, продуктивность птицы.

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Prospects of industrial and innovative development of the economy of Kazakhstan in modern conditions

Abstract

Object: Industrial and innovative development of the economy of the Republic of Kazakhstan is a priority issue of all economic development. State regulation of the economy purposes at strategic objects and problems formulation for perspective development.

Methods: The article presents data on the volume of industrial production, the physical volume indices for manufacturing industries are considered. The trends and levels of technological industrialization of manufacturing industries are considered separately.

Findings: The trends and forms of the manufacturing industry's development of the Republic of Kazakhstan in the sectoral and regional section are considered. Priority orientations of the industry development have been determined. The prospects for strategic planning are noted, and also the differentiation in the level of regional development. The dynamics of changes in the gross domestic product is considered and some prospects for the development of the manufacturing industry in terms of the development of petrochemical production are determined.

Conclusions: The article formulation the issues of transformation to an export-oriented economy and defines the trends of development of real sector industries.

Keywords: strategy, manufacturing industry, forecasts, regional development, technological level.

Introduction

State regulation of the economy involves setting strategic purposes and problems for the long term prospect. To determine the prospects for the development of the state's economy, it is necessary to assess the impact of both external and internal factors, exogenous and endogenous, taking into considering the processes of globalization and integration, and analyzing technological trends. The most important role in determining the prospects for the development of the country's economy has the state of the environment, the consequences of changing which already now lead to irreversible processes.

Therefore, the implementation of the problems of strategic planning of the economy on a national measure, and also at the macroregional level, is associated with solving a wide range of problems. In this regard, the *purpose* of our research is to identify the prospects and directions of economic development of the Republic of Kazakhstan in the sectoral and territorial aspects. We have set the problem to analyze the state of industrial development of the country's economy and create a promising model of the country's economy.

Literature Review

A number of authors devoted their work to the industrial and innovative development of the economy of Kazakhstan in modern conditions and in a pandemic [4-9]. And there are also many articles on the directions and levels of technological industrialization of manufacturing industries [13-16]. All the diversity of views and approaches to the industrial and innovative development of the country are considered in the works of domestic scientists, such as: Koshanov A., Sabden O., Alshanov R., Dnishev F., Sagadiyev K., Zhaleleva R., Gabdullin R., Nurlanova N., Kussainov B.

The article reflects the distribution of manufacturing enterprises by the level of technological development in the regional context for 2018 (as a percentage of 100% of the total of each region).

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The directions and forms of development of the manufacturing industry of the Republic of Kazakhstan in the sectoral and regional context are considered. The article emphasizes that at present, with the advent of a foreign owner in the economy of Kazakhstan in the person of multinational companies, the economic interests of domestic production do not always coincide with the specific owner.

Methods

At the state level, strategic planning is the development of a long-term development Strategy. The main way of development of the economy of the Republic of Kazakhstan is the transition to the tracks of industrial development. The defining indicator of the level of industrialization of the economy is the indicator of the development of manufacturing industry in a multi-sector economy. Table 1 shows the indicators of the republic's industrial production volumes and indices for 2018.

As can be seen from these calculations, the part of the manufacturing industry in the structure of the entire industry is only 45.34%, and the physical volume index in ratio to the previous year is a few lower than the same indicator for the mining industry. In the structure of manufacturing industries, the specific gravity is more than 40%, then followed by the food industry and mechanical engineering. The part of petrochemical and coal industry products processing is less than 10%. The development of manufacturing industries with the production of products with high added value requires the formation of modern technological industries matching to the development level of developed countries, ensuring that the level of labor productivity is raised to world standards.

Table 1. Volumes and indices of industrial production by enlarged types of activity

Indicators	Production volume in current prices, mln. tenge	The specific gravity of the industry as a percentage*	The index of industrial production 2018, in % to 2017
Entire industry	27 218 063	100	104,4
Mining and quarrying	14877068	54,65	104,6
Manufacturing industry, including	10 403 854	45,35 (100% for sub-sectors)	104,5
food production	1 527 687	12,9	100,9
beverage production	343 794	3,8	103,2
production of tobacco products	123 620	1,4	101,2
light industry	99 351	0,8	106,9
production of paper and paper products	62 381	0,9	106,1
production of coke and refined petroleum products	901 982	9,9	109,1
production of chemical industry products	401 141	4,8	108,7
production of basic pharmaceutical products	78 526	1,5	91,9
production of rubber and plastic products	211 380	2,4	108,3
production of other non-metallic mineral products	563 678	4,8	103,1
metallurgical industry	4 614 873	43,1	102,4
production of finished metal products, except for machinery and equipment	239 609	2,2	103,8
mechanical engineering	1 089 800	10,9	114,4
furniture production	38 613	0,3	103,1
Other industries	146 032	2,7	

Note - compiled according to the express information No. 36-5/227 of June 28, 2019 [1]
* Authors' calculations

It is no secret that the technological lag of any production is a significant obstacle to the growth of labor productivity.

The most promising course of the country's economic development in conditions of the economic crisis caused by political factors, differences in the global price war between OPEC and Russia, and *coronavirus pandemic* is the development of agriculture and transformation to organic farming and animal husbandry, for which our country has a distinct absolute advantage. In terms of quality, area and climatic conditions, the republic occupies a leading position in the world economic s area.

In the condition of a global economic recession and decline, even with a negative deviation in world oil prices, the development of petrochemical industries should become the technological trends for Kazakhstan.

It is necessary to abandon the export-oriented economy oriented on the mining of raw materials and the role of a raw material appendage of the world economy. Developing the production of petrochemical prod-

ucts and focusing on the processing and deepening of oil refining processes and the development of the chemical industry on this basis.

In the conditions of modern economic development and high volatility of prices for raw energy resources, it is necessary to develop the petrochemical industry. The chemical industry in Kazakhstan is basically represented by the enterprises of Kazphosphate LLP and KazAzot JSC, and also by the activation of the pharmaceutical industry.

The chemical industry of the Republic of Kazakhstan is one of the most important industries of the country. The products of this industry are widely used for the manufacture of different consumer products, and should find extensive applying:

- oil industry (oil and gas pipelines, service equipment, etc.);
- construction (building materials and structures);
- agriculture (pesticides, fertilizers, etc.);
- pharmaceuticals;
- textile and furniture production, etc.

Against the background of the global recession, the domestic chemical industry has shown positive dynamics in latest years. From 2010 to 2018, the volume of production in monetary terms increased by 3.2 times – from 104.1 to 387.6 billion tenge.

The increase in indicators was due to the restoration and modernization of enterprises, and also the introduce of new investment projects in the framework of the “Industrialization map”. The chemical industry is also the largest consumer of refined petroleum products. The issues of deep processing of crude oil are the most sensitive for the successful development of the petrochemical and chemical industry. Unfortunately, this sphere is limited to the use of domestic raw materials for obtaining products of primary processing of crude oil.

During the period 2010-2018, 54 projects were realized, which made it possible to expand the assortment of manufactured chemical products. In 2010-2018, the volume of exports in monetary terms increased by 2 times – from 383 to 783 million US dollars. Today, due to government support, the domestic pharmaceutical industry is actively developing. The existing production places are being expanded and new production places are being opened that match international standards. Over the period from 2010 to 2018, the volume of production in the pharmaceutical industry increased 4 times, from 19.9 billion tenge to 78.8 billion tenge.

Kazakhstan have been developed a number of long-term strategic programs for the transition to industrial and innovative development and strengthening of manufacturing industries.

We will focus separately on the realization of the State program of industrial and innovative development of the Republic of Kazakhstan for 2020-2025, accepted in December 2019. The program is financed from the republican (national) budget. The total amount of financing for the Program for 5 years is 780797.1 million tenge (table 2).

Table 2. Financing of the industrial and innovative development program for 2020-2025

Years	2020	2021	2022	2023	2024	2025	Total:
Republican budget	146 065,3	215 725,1	107 896,4	107 863,5	101 996,9	101 249,9	780 797,1

Note - compiled according to the site <http://adilet.zan.kz/rus/docs/P1900001050> [2]

According to the arrangement plan for the realization of the program, 157.70 billion tenge was allocated for the realization of PIID projects.

In the program of industrial and innovative development, the growth dynamics of the manufacturing industry in 2018 relative to 2010 is characterized as follows: the volume of production increased from 3.8 trillion tenge in the base year of 2010 to 10.4 trillion tenge in 2018, or 2.7 times in nominal terms. The average annual growth rate of the index of physical volume of industrial production in the manufacturing industry in the indicated period was 4.5 % and increased, in total, by 42.3 % (2018 to the level of 2009). This is twice as high as in the mining sector (21.4 %).

The program sets purposes to achieve the following indicators in the area of development of the Republic's manufacturing industry by 2025:

- 1) real growth of labor productivity in the manufacturing industry compared to 2018 by 60%;
- 2) growth of manufacturing industry exports by 90% compared to 2018;

3) the index of physical volume of investments in fixed assets in the manufacturing industry by 1.6 times to the level of 2018;

4) an increase in the number of operating manufacturing enterprises per 1000 people of the economically active population by 1.5 times to the level of 2018, i.e. by 50%;

5) increasing the place in the Index of Economic Complexity (Harvard) from 78 to 55 (level from -0.31 points to 0.14 points).

According to the state program, the part of the manufacturing industry in 2018 was only 11.4%, in the structure of GVA of industries, which is lower than the global level of 15.6%.

The level of technological development of manufacturing industries in the regional context for 2018 is shown in figure 1.

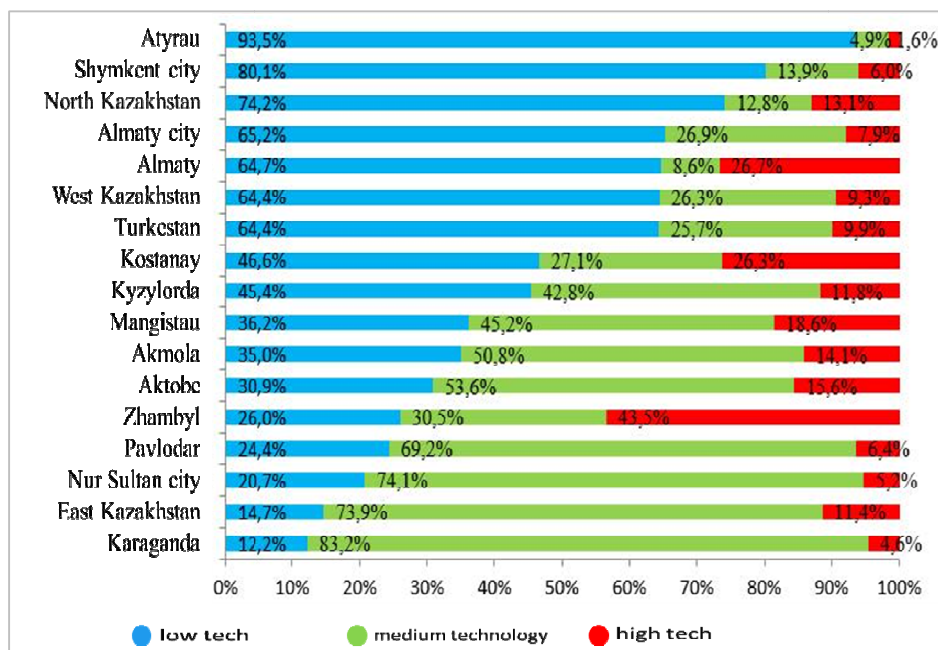


Figure 1. Distribution of manufacturing enterprises by level of technological development in the regional context for 2018 (as a percentage of the 100% total of each region)

Note – compiled by the authors based on s [3]

In the industrial structure of manufacturing enterprises, 44.4 percent is happened to by metallurgical production, and petrochemical enterprises happened to only 10%.

The largest specific gravity of low-tech industries (93.5%) happened to the Atyrau region, basically oriented on oil production. And the minimal specific weight was registered in the Karaganda region, accordingly, in this area – the highest indicators for average technological production. This is quite naturally for the old industrial region. The largest specific gravity of high-tech production (companies) was registered in Zhambyl region (43.5%) with an average republican indicator of 10.9%. That is, the excess is more than 4 times the value. An outsider among these industries is the Atyrau region, which has a precise raw material orientation on oil production. Thus, we can note a high degree of differentiation of regional development and technological backwardness of oil-producing regions, despite their overall level of social and economic development.

In 2019, according to the industrialization map, 130 projects totaling 449 billion tenge were planned to be realized in the republic with the creature of 12.6 thousand jobs. According to the results of 12 months, 76 projects worth 360.6 billion tenge were introduced with the creation of more than 6100 permanent jobs. Thus, the analysis of the state of the level of industrial development of the country's economy revealed a high level of differentiation of the regional economy.

We believe that the development of the petrochemical cluster is a promising direction in the context of a steady decline in consumer demand for crude oil and a rapid transition to the processes of in depth processing of petroleum products with bringing the stages of technological conversion to the production of finished products for the needs of all manufacturing industry. We have proposed the objective of structural adjustment of the country's economy with priority development of petrochemical production and agriculture with re-adjustments

of in-depth processing of crop and livestock products of the agro-industrial complex. We see a promising development of agriculture and bringing the share of processing of crop and livestock products to the level of industrial development of the food industry and light industry, leather and textile industries.

Results

The development and implementation of Strategic plans determines the prospects for the development of the country's economy and its strategically important sectors, that is, the choice of development priorities. This direction was devoted to the cluster selection of the development of strategic industries and the formation of clusters that group the development of individual industries. It should be noted that the cluster approach is somewhat similar to the theory of creating territorial-industrial complexes, the purpose of which was to create a single technological chain from the extraction of primary raw materials to delivery to the final consumer.

The basis for the formation of the territorial production complex was the idea of creating energy production cycles by N. Kolosovsky. At that time of economic development, this scale was justified by the country's economic prospects, based on the possibilities of comprehensive strategic planning of the national economy.

Currently, with the arrival of a foreign owner in the economy of Kazakhstan in the form of multinational companies, the economic interests of domestic production do not always coincide with a specific owner.

The ideas of the territorial production complex are not fully realized in the modern economy due to the factor of taking into account sales markets and changes, the situation for raw materials and emerging technological trends, which are dictated by the new economic reality. But despite the dynamic changes in the world economic system and the emergence of new approaches to planning, the planning methodology as a system retains all its inherent properties [10].

Structural elements of the methodological system of social and economic planning include basically theoretical and specific principles, a system of methods and approaches in planning, organizational aspects of the planning system, accounting for the time horizons of plans and their main indicators.

Modern forecasts consider not only the objectively emerging trend of development, but also the possible consequences of the implementation of state measures to regulate the market. This form of planning can include economic, including tax measures of state support for economic entities involved in the implementation of the plan [11].

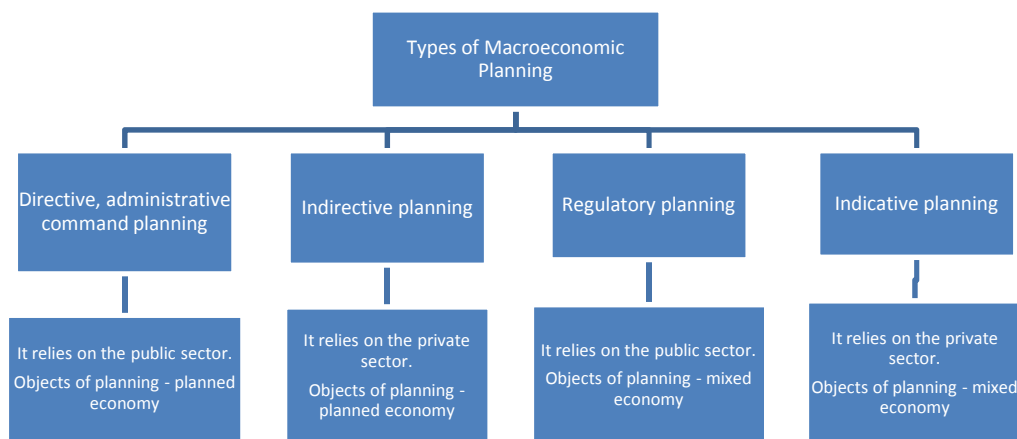


Figure 2. Diagram of the relationship between types of macroeconomic planning

Note: developed based on [12]

Currently, many countries use market forecasts that assess the economic situation: on the market of a particular product; in a particular sector of the economy; on the world market.

Local government institutions, management bodies of corporations, financial and industrial groups, and other business units participate in the planning process.

The world economic system is currently actively using the capabilities of not only forecasting, but also planning. Foreign practice actively uses the Soviet experience of planning. Modern state plans, unlike the Soviet ones, are not directive in nature.

In Kazakhstan, at the state level, national programs are currently being adopted, provided with a system of financing in the following areas of development of the country:

- strengthening of the national currency;
- industrial and agricultural development;
- education, research;
- social protection of the population and employment;
- environmental safety;
- reform of public services, etc.

In the future, based on development and forecasting, it is planned to achieve technological and institutional modernization of the entire economy of the Republic of Kazakhstan.

The economic development of the Republic of Kazakhstan is characterized by active dynamic development. Table 3 shows the indicators of GDP dynamics for 2008-2018.

In figure 3, we present a graphical representation of the dynamics of gross domestic product, calculated in the national currency (curve line) and US dollars (bar chart) for 2008-2018 with the trend equation.

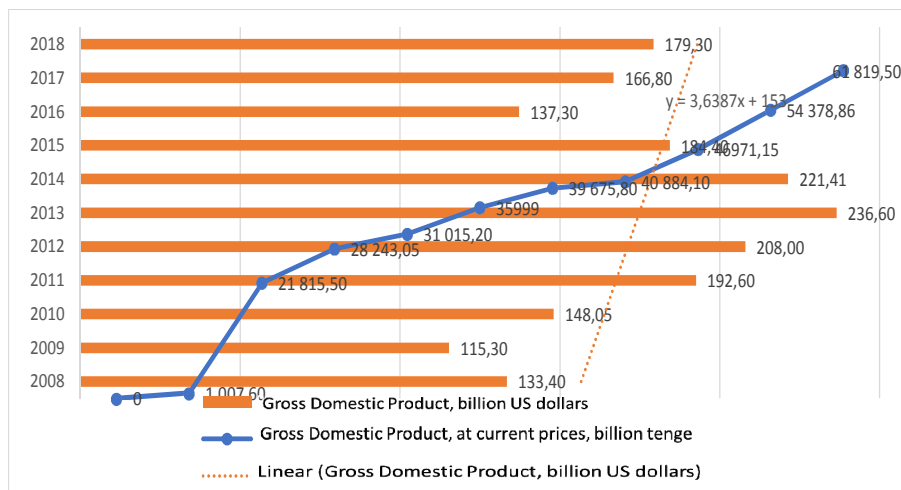


Figure 3. Dynamics of GDP changes in the national currency in current prices and US dollars

Note: developed by the authors based on the source [10]

In figure 3, we graphically display the GDP indicators in US dollars in a horizontal bar chart and show the equation of the trend of this indicator, which has a positive dynamics. GDP at current prices in the national currency is shown in the form of a polyline curve.

More clearly, the GDP indicators in the national currency are shown in figure 4.

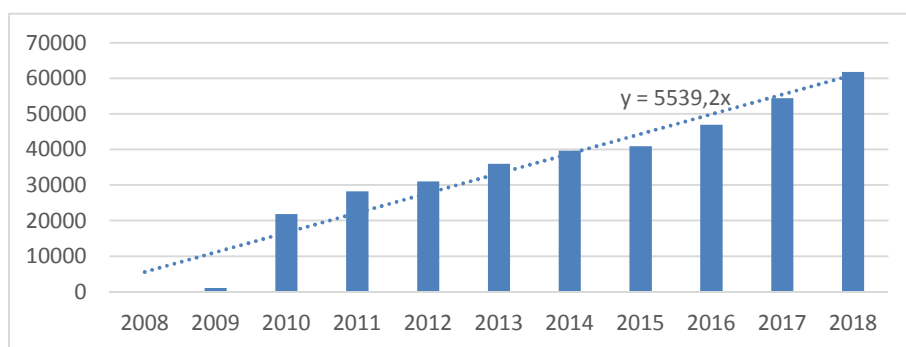


Figure 4. The volume of GDP and the trend line for the period 2008-2018

Note: developed by the authors based on the source [11]

Figure 4 shows a diagram of the change in gross domestic product, at current prices, calculated in national currency, in the form of a bar chart.

The prospects for the development of the republic's economy tend to grow, but a high degree of instability of the exchange rate creates crisis situations that affect the dynamics of gross domestic product. The main reason for this instability is the high dependence on the global energy market and the resulting fluctuations in oil prices. High instability of the national currency exchange rate is provided by fluctuations in demand for other products of the mining and metallurgical complex of the republic.

Table 3. Dynamics of the gross domestic product of the Republic of Kazakhstan for 2009-2018

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Gross Domestic Product, in current prices, billion tenge	16.052?,9	17.007,6	21.815,5	28.243,05	31.015,2	35.99,0	39.675,8	40.884,1	46.97,15	54.378,86	61.819,5
Gross Domestic Product, million US dollars	133.440,7	115.306,1	148.052,4	192.627,6	208.002,1	236.633,3	221.417,7	184.387,0	137.278,3	166.806,3	179.337,8
Index of physical volume of GDP, as % of the previous year	103,3	101,2	107,3	107,4	104,8	106,0	104,2	101,2	101,1	104,1	104,1
GDP deflator, as % of the previous year	121,0	104,7	119,6	118,9	104,8	109,5	105,8	101,9	113,6	108,4	109,2
Real change in GDP, 2008 = 100, percent	100,0	101,2	108,6	116,6	122,2	129,5	134,9	136,5	138,0	143,7	149,6
Real change in GDP, 2009 = 100, percent	98,8	100,0	107,3	115,2	120,7	127,9	133,3	134,9	136,4	142,0	147,8
Real change in GDP, 2010 = 100, percent	92,1	93,2	100,0	107,4	112,6	119,4	124,4	125,9	127,3	132,5	137,9
Real change in GDP, 2011 = 100, percent	85,8	86,8	93,1	100,0	104,8	111,1	115,8	117,2	118,5	123,4	128,5
Real change in GDP, 2012 = 100, percent	81,8	82,8	88,8	95,4	100,0	106,0	110,5	111,8	113,0	117,6	122,4
Real change in GDP, 2013 = 100, percent	77,2	78,1	83,8	90,0	94,3	100,0	104,2	105,5	106,7	111,1	115,7
Real change in GDP, 2014 = 100, percent	74,1	75,0	80,5	86,5	90,6	96,0	100,0	101,2	102,3	106,5	110,9
Real change in GDP, 2015 = 100, percent	73,1	74,0	79,4	85,3	89,4	94,8	98,8	100,0	101,1	105,2	109,5
Real change in GDP, 2016 = 100, percent	72,4	73,3	78,6	84,4	88,5	93,8	97,7	98,9	100,0	104,1	108,4
Real change in GDP, 2017 = 100, percent	69,7	70,5	75,6	81,2	85,1	90,2	94,0	95,1	96,1	100,0	104,1
Real change in GDP, 2018 = 100, percent	66,9	67,7	72,6	78,0	81,7	86,6	90,2	91,3	92,3	96,1	100,0

Note - developed by the authors based on the data of the Committee on Statistics of the Ministry of National Economy [3]

The novelty of this research is the proposal to emphasize the development of indicative and regulatory planning of local authorities and local self-government bodies. The separation of ownership forms and the transfer of strategic objects to private ownership without assigning these owners all forms of responsibility leads to tragedies, such as the lack of a system for monitoring the state of hydraulic structures and the break of the dam in the village of Saryagash. This is one of the most famous disasters, and, unfortunately, not the only one.

The economic independence of these structures will contribute to the rapid solution of local economic problems at the level of economic entities of all forms of ownership.

Conclusions

The paper reflects the trends in the development of manufacturing industries and emphasizes the task of accelerated development of the petrochemical industry. Force majeure circumstances occurring in the modern economy should not affect a significant decline in the pace of economic development. Precisely, these circumstances should be an incentive for the activation of the manufacturing industry, which is incomparably less dependent on external factors, in particular the supply of resources and fluctuations in the price of natural resources and depend on the demand for and volume of consumption of raw materials. The country's recent documents pay special attention to this area, in particular, the implementation of the Business Map and the country's economic recovery.

The paper purposes to analyze the state of the level of industrial and innovative development of the country and to develop promising directions of economic development. In this regard, the transition to industrialization of the country's economy is an urgent need of time. The development of the cluster petrochemical complex in the western regions of the country and the development of the agro-industrial complex in almost all regions should become the engine and catalyst for the socio-economic recovery of the country. In this paper, we have made a brief analysis of the transition to industrial and innovative development based on the growth of the manufacturing industry. In general, despite the absolute growth of GDP, in relative terms, there is a decrease in the growth rate of the indicator. In other words, the potential growth of the country's economy due to extractive industries is close to being exhausted. The practical value of this research lies in the cognitive nature of the material and in the implementation of provisions and proposals in state programs, as well as the possibility of using this material in the educational process and in the methodological plan.

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Қазіргі жағдайда Қазақстан экономикасының индустриялық-инновациялық даму перспективалары

Аңдатпа

Мақсаты: Қазақстан Республикасы экономикасының индустриялық-инновациялық дамуы бүкіл экономикалық дамудың басым міндеті болып табылады. Экономиканы мемлекеттік реттеу стратегиялық мақсат пен міндеттерді ұзақ мерзімді дамуға қоюды мақсат етеді.

Әдісі: Мақалада өнеркәсіптік өндіріс көлемі туралы мәліметтер келтірілген, өңдеуші өнеркәсіп салалары бойынша физикалық көлемінің индекстері қарастырылған. Өңдеуші өнеркәсіп салаларын технологиялық индустрияландыру бағыттары мен деңгейлері жеке зерттелді.

Қорытынды: Салалық және аймақтық бөліністегі Қазақстан Республикасының өңдеуші өнеркәсібін дамытудың бағыттары мен нысандары қарастырылды. Саланы дамытудың басым бағыттары айқындалды. Стратегиялық жоспарлау перспективалары атап өтілді және өңірлерді дамыту деңгейінде саралалануы белгіленді. Жалпы ішкі өнімнің өзгеру динамикасы қарастырылып, мұнай-химия өндірісін дамыту тұрғысынан өңдеуші өнеркәсіпті дамытудың кейбір перспективалары анықталды.

Тұжырымдама: Мақалада экспортқа бағытталған экономикаға көшу міндеттері қойылған және нақты сектор салаларын дамыту бағыттары анықталған.

Кілт сөздер: стратегия, өңдеуші өнеркәсіп, болжамдар, аймақтық даму, технологиялық деңгей.

Р.А. Муратова, Ж.С. Мухаметжанова, К.А. Курбанова, Ж.С. Мухаметжанова

Перспективы индустриально-инновационного развития экономики Казахстана в современных условиях

Аннотация

Цель: Индустриально-инновационное развитие экономики Республики Казахстан является приоритетной задачей всего экономического развития. Государственное регулирование экономики ставит целью постановку стратегических целей и задач на перспективное развитие.

Методы: В статье приведены данные по объемам промышленного производства, рассмотрены индексы физического объема по отраслям обрабатывающей промышленности. Изучены отдельно направления и уровни технологической индустриализации отраслей обрабатывающей промышленности.

Результаты: Рассмотрены направления и формы развития обрабатывающей промышленности Республики Казахстан в отраслевом и региональном разрезе. Определены приоритетные направления развития отрасли. Отмечены перспективы стратегического планирования и дифференциация в развитии регионов. Изучена динамика изменения валового внутреннего продукта и определены некоторые перспективы развития обрабатывающей промышленности в нефтехимическом производстве.

Выводы: В статье поставлены задачи перехода к экспортоориентированной экономике и определены направления развития отраслей реального сектора.

Ключевые слова: стратегия, обрабатывающая промышленность, прогнозы, региональное развитие, технологический уровень.

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Improvement of regional development using current and strategic territorial management mechanisms

Abstract

Object: The successful development of the regions requires certainty and the presence of consolidating ideas about the future. These are important needs of business and society, which are satisfied through the mechanism of territorial socio-economic planning. This article discusses the concept of strategic management, describes the differences between strategic and current management on the example of management of sectors of the social block. The essence of the management of the territorial economy of the region, as well as issues of the implementation of life support and social services of the population, improvement of the territorial economy as a whole was investigated.

Methods: The following methods were used during the research: empirical, analytical, synthetic and comparative logical ones.

Findings: Therefore, the main form of territorial management is the combination of current and strategic management within the governing body. The implementation of this approach requires a very careful attitude to the construction of the internal structure of the management body, taking into account the peculiarities of the organization of different types of management. Let's try to give a more detailed description of the main approaches to building management structures focused on combining current and strategic management.

Conclusions: When forming a strategic planning mechanism, one should proceed from the need to respect the interests of all participants in the development of the territory: government, business, and the public. But the driving force is always the government: it not only realizes its interest, but also creates conditions for the effective functioning of enterprises, improving the investment climate of the territory, provides equal competitive opportunities for all partners in the region. A well-developed strategic plan is the basis for implementing more detailed plans for each year.

Keywords: region, territory economy, strategy, mechanism, information, territorial socio-economic planning.

Introduction

When considering the main fundamental difference between strategic and ongoing management, it can be concluded that it is for management purposes. Different types of management differ, first of all, in the achievement of what result they are aimed at. In our case, when it comes to managing the territorial economy of the region, the goals of the authority are to maintain the existing systems through which the needs of residents are realized (primarily life support and social services for the population), as well as the development of the territorial economy as a whole, and its acquisition of new qualitative characteristics of a higher level.

The current management acts as a system of managerial influences aimed at maintaining and functioning systems that ensure the existence and development of the territory. Unlike the current one, strategic management is aimed at creating new qualitative characteristics of a higher level for the entire territorial economy of the region. But these differences in goals do not mean a rigid separation between the non-strategic (current) and strategic management of the region's territorial economy. Moreover, such a contrast is extremely harmful. Since, without setting priorities for the development of the territorial economy as a whole, it is impossible to prioritize the current management of sectors of the territorial economy. On the other hand, the current management state is the most important resource of strategic management, and improving the quality

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of current management is one of the strategic tasks. But in the absence of a clearly expressed strategy for the development of the territory as a whole, it is impossible to see and assess the role and place of each branch of the territorial economy for the future.

Nevertheless, despite the close linkage between current and strategic governance, we need to address them separately within our task, as methods and tools will be very different. And most importantly, when these two types of management are mixed, performance decreases, since the motivations of the management structures in the implementation of different types of management differ significantly.

Methods

Let's consider these differences using the example of social block industry management. In carrying out the current management, we will first of all be interested in ensuring the activities of a network of educational institutions, health care, etc. For example, the state of the region's education system, its ability to adapt rapidly to the interests of economic clusters (in the training of specialized labor, production and reproduction of innovations and know-how) operating in the territory, is one of the most important conditions for the territory's competitiveness (Gruzdev, 2008). To solve this problem, we need to develop funding standards and solve the main issues of maintaining institutions, lay down the main parameters of the network by agreeing on cost estimates and forming the conditions for a municipal order. To do this, the current planning of the development of industries is carried out, the corresponding regulatory framework is formed. Industry departments administer and monitor compliance with the basic parameters laid down in the budget and annual plan.

In the case of strategic management, at every given moment it is fixed what the organization (in this case, the state, approx. Author) must do at present in order to achieve the desired goals in the future, based on the fact that the environment and living conditions of the organization will change, that is, in strategic management, as if there is a view from the future to the present (Merenkova, 2011). The actions of the organization are defined and carried out at present, providing it with a certain future, and not a plan or description of what the organization will have to do in the future.

First, unlike non-strategic management, it is characteristic that not only the desired future state of the organization is recorded, but also this is the most important task of strategic management, the ability to respond to changes in the environment that allow achieving the desired goals in the future is developed.

Second, in non-strategic management, the formulation of a programme of action begins with an analysis of the organization's internal capabilities and resources. With this approach, all an organization can determine based on an analysis of its internal capabilities is how much product it can produce and what costs it can incur. But the volume of production, and the amount of costs does not give an answer to the question of how much the created product will be accepted by the market, how much will be bought and at what price, the market will determine.

Completely different management methods will be implemented in strategic management. The first task will be to adjust the main parameters of the network based on strategic priorities (opening new specialties in educational institutions that ensure the development and activities of business entities, encouraging the opening of centers of innovation and know-how at educational institutions, organizing more creative competitions, work with associations of economic details subjects to organize their interaction with social sectors, etc.). In strategic management, the social sphere is considered not only as a system for meeting the basic needs of the inhabitants of the territory, but also as a resource (specialized education and health care, a system for the flow of knowledge, innovation, know-how, etc.).

The scope of direct administration, rationing and municipal order is sharply limited compared to current management. This is due primarily to restrictions on the spending of budget funds and the use of state and municipal property. In this area, we can only strengthen certain positions within the framework of permitted financing items and prioritization in the use of public property. In other words, to form conditions, not to engage in direct management.

In relation to business entities, direct management methods are not applicable at all. When working with enterprises and institutions that are not part of the public sector of the economy, indirect management methods are used: promoting the formation of specialized infrastructure, investing in services, promoting the development of forms of closer interaction between enterprises included in territorial clusters, lobbying for the interests of the territory at other levels of public power, etc.

Along with the obvious advantages, strategic management has a number of drawbacks and limitations in its use, which indicate that this type of management, as well as all others, does not have the universality of application in any situation to solve any problems:

1. Strategic management, by its essence, does not provide an accurate and detailed picture of the future. The future desired state of the organization formed in strategic management is not a detailed description of its internal and external position, but rather, a qualitative wish for the state in which the organization should be in the future, what position to take in the market and in business, what organizational culture to have, be part of which business groups, and all this in aggregate should be that, which will determine whether or not the organization will survive in the future in competition. Strategic management cannot be reduced to a set of routine procedures and schemes, it does not have a descriptive theory that prescribes what and how to do when solving certain problems or in specific situations.

Thus, strategic management is rather a certain philosophy or ideology of business and management. And each individual manager understands and implements it to a large extent - in its own way, but there are a number of recommendations, rules and logical diagrams for analyzing problems and choosing a strategy, as well as implementing strategic planning and practical implementation of the strategy.

2. Strategic management is a symbiosis of the intuition and art of senior management to lead the organization to strategic goals, high professionalism and creativity of employees, ensuring the organization's connection with the environment, updating the organization and its products, as well as implementing current plans and, finally, actively including all employees in the implementation of the organization's goals, in the search for the best ways to achieve its goals.

3. Enormous effort and time and resources are required for the organization to begin its strategic management process. It is necessary to create and implement strategic planning, which is fundamentally different from the development of long-term plans that are mandatory under any conditions. The strategic plan must be flexible, responsive to changes within and outside the organization, and requires very much effort and cost. You also need to create services that monitor your environment and include your organization in your environment. The services of marketing, public relations, etc. acquire exceptional importance and require significant additional costs.

4. The negative consequences of strategic foresight errors are sharply increasing. In conditions where completely new products are created in a short time, when investment directions change dramatically in a short time, when new business opportunities suddenly arise and many years of opportunities disappear before our eyes, the price of reckoning for incorrect foresight and, accordingly, for errors of strategic choice, it often becomes fatal for the organization. Especially tragic are the consequences of an incorrect forecast for organizations implementing a non-alternative way of functioning or implementing a strategy that is not subject to fundamental adjustment.

5. Strategic management often focuses on strategic planning. In fact, the implementation of the strategic plan is an essential component of strategic management. And this involves first of all creating an organizational culture that allows you to implement a strategy, create motivation and organization of labor, create a certain flexibility in the organization, etc. At the same time, in strategic management, the implementation process has an active opposite effect on planning, which further enhances the significance of the implementation phase. Therefore, an organization (a State or a State body) will not be able, in principle, to move to strategic management if it has created, even if it is very good, a subsystem of strategic planning and there are no prerequisites or opportunities for creating a subsystem of strategic implementation (Vikhansky, 2006).

Results

Thus, speaking about the management of the territorial economy of the region, we consider two main types of management: current and strategic. Despite the serious differences between these types of management, they have a common subject of management - a public authority. Attempts to allocate individual state or municipal organizations for strategic management (in the USA in the 70s of the XX century, in the UK in the 80s of the XX century) have shown that this is possible only for the implementation of individual programs and projects (Gordon, 2005).

Therefore, the main form of territorial management is the combination of current and strategic management within the governing body. The implementation of this approach requires a very careful attitude to the construction of the internal structure of the management body, taking into account the peculiarities of the organization of different types of management. Let's try to give a more detailed description of the main approaches to building management structures focused on combining current and strategic management.

Currently, in theory and in practice, a fairly homogeneous view has been formed regarding the structure of strategic management, the main components of which are: Strategic planning (a special type of management activity, consisting in the development of strategic solutions that include such goals and strategies for the behavior of management objects, the implementation of which ensures their effective functioning in the long term, rapid adaptation to changing conditions of the external environment, implementation of the strategy and strategic control (Strategic planning in Russian municipalities, 2010).

Strategic planning first began to be applied in Europe and the USA in the 1970s. Strategic planning at the level of a municipality can be defined as "a systematic process through which local communities (with the participation of all stakeholders) create a picture of their future, based on local resources, external and internal conditions, and determine stages and activities to achieve the intended goals (Hrabrov, 2013).

The strategic development plan can be seen as a document reflecting the desired future state of the economic and social structure of the region (goal) and a way to use available and feasible resources to achieve this.

The basic principles of strategic planning for the development of territories are:

1. Reliance on available resources. Objective accounting of material, financial, labor and scientific resources will make it possible to correctly assess the competitive advantages and opportunities of the territory and determine the main directions of its development.

2. Taking into account historical and spatial-geographical features and patterns of development of the territory. It is impossible to disrupt the natural economic and socio-cultural course of events, and it is necessary to continue them creatively.

3. Taking into account world development trends, as well as scientific, technical and socio-economic processes.

4. Finding allies. Alone, regional territories, and especially individual municipalities, cannot cope not only with the implementation of the plan, but also with current problems. Allies should be sought in all instances and areas: among higher authorities, in the entrepreneurial environment, the media, and science. We cannot do without a positive public opinion.

5. Excluding imitation. Do not seek to become a shadow of another territory (Pizarenko, Dolgach, 2008).

In order to understand the problems hindering the spread of strategic planning, it should be borne in mind that, firstly, it is not adequate for the establishment by society of a certain order and the unquestionable implementation of activities strictly in accordance with previously developed tasks, that is, it is not built on the basis of command orders. Secondly, in strategic planning, the achievement of the future is not realized as a rigid line of behavior, but acts as a motion vector that can constantly adjust its orientation under the influence of newly emerging conditions and factors. The main thing here is the implementation of the mission of development of the territory. Thirdly, strategic planning is not a self-regulatory system that is influenced by and adapts to external conditions.

Discussions

N.V. Chepurnyh, A.V. Merzlov, A.L. Novoselov, note: "It should be noted that the strategic plan is not a law or decree mandatory for the administration, entrepreneurs and citizens. It is mandatory as much as the administration considers it the basis of its economic policy. "(Chepurnyh et al, 2006).

The origins of strategic planning for economic development are in the analysis of organizational behaviour. Only after understanding the possibilities of this type of planning at the organizational level can we talk about transferring its principles to territorial planning. In this regard, one of the ways to theoretically ensure territorial development is to borrow developments accumulated in the framework of strategic planning in enterprises (Efremov, 1999).

Currently, some regions and territorial entities do not have strategic development plans, and in some cases, existing plans are considered only as a description of the general vector of development of the Territory, regardless of the need to carry out any measures to implement these plans.

– it is clearly understood that it is impossible to predict the state of the territorial environment in the future;

– There is an inextricable link between the Territory and its political environment, and it is not possible to pursue an independent line of development without coming into conflict with that environment.

An alternative option for territorial behaviour is active interaction with the external environment through strategic planning activities.

The impact of strategic planning activities at the territorial level can be presented in the following diagram (Figure 1).

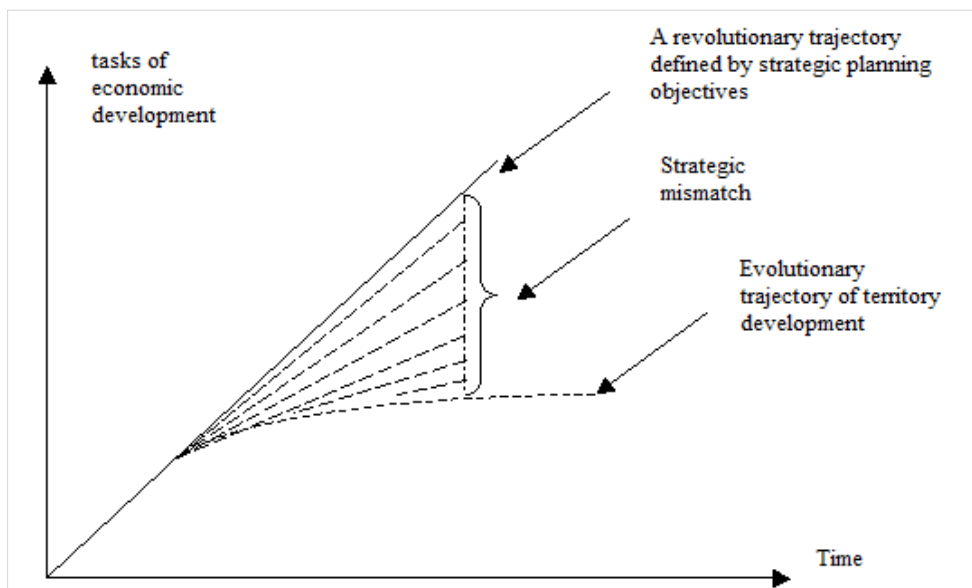


Figure 1. Territory development using strategic planning tools

Note — compiled by the authors

Consider the essence of strategic planning by analyzing the various definitions of this concept. At the same time, we note that most definitions are related to planning at the organizational level. G. Mintzberg highlights the following planning understandings: (Mintzberg, 2000).

1. Planning as thinking about the future;
2. Planning as control of the future;
3. Planning as decision-making;
4. Planning as an integrated decision-making process;
5. Planning as a formalized result formulation procedure in the form of an integrated solution system.

However, in this case, both understandings of the strategy are correct, since the strategy involves the presence of a certain list of actions (plan) and serves as a model for the actions being implemented.

V.S. Bochko writes: "We need creative coordinated actions of the authorities, all structures and social groups. Such an opportunity is presented by the development and implementation of strategic development plans of the Territories, that is, integrated developing and solving social issues not only on the basis of the residual principle, but on the basis of targeted programmatic development." (Bochko, 2010). According to V.S. Bochko, the positive sides of the strategic plans are:

- Systematic resolution of objective contradictions;
- The integrated use of resources in the Territory;
- Targeted structural adjustment in the Territory towards diversification of the economy and services;
- Moving away from the "raw material" focus of the development of the local economy;
- Subordination of investment activities to create comfortable industrial and cultural conditions for the population of the territories;
- Gradual approximation of municipal economies to world-class development standards.

Conclusions

When forming a strategic planning mechanism, one should proceed from the need to respect the interests of all participants in the development of the territory: government, business, and the public. But the driving force is always the government: it not only realizes its interest, but also creates conditions for the effective functioning of enterprises, improving the investment climate of the territory, provides equal competitive opportunities for all partners in the region. A well-developed strategic plan is the basis for implementing more detailed plans for each year. At the same time, it should be borne in mind that the strategic plan does not represent a guarantee of the implementation of the envisaged development strategies, but is only an im-

portant tool that helps to implement the chosen directions of development. It is always based on information that was known during its development. The main results of the strategic plans will be:

- Improving the Territory's competitiveness;
- Developing a new way of thinking about the forms and methods of development of the Territory;
- Formation on the territory of structures - locomotives of economic development;
- Synthesis of state municipal regulation and market self-regulation;
- Formation of a new corporate type of relationship between government, business, the public and other entities.

The end result of the strategic development of the territory is the achievement of the social effect of the activities carried out, which consists in improving the well-being of the population living in this territory of the region.

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З.Н. Борбасова, Р.Е. Несипбаев, С.Н. Улаков, Н.С. Улаков

Аумақтарды ағымдағы және стратегиялық басқару тетіктерін пайдалана отырып, өңірлерді дамытуды жетілдіру

Аңдатпа

Мақсаты: Өңірлерді табысты дамыту үшін сенімділік және болашаққа қатысты шоғырландырушы идеялардың болуы қажет. Бұл бизнестің және қоғамның маңызды қажеттіліктері, олар аумақтық әлеуметтік-экономикалық жоспарлау, ең алдымен стратегиялық жоспарлау механизмі арқылы қанағаттандырылады.

Әдісі: Зерттеу барысында келесідей әдістер қолданылған: бақылау, жалпылау, салыстыру, талдау, жүйелік тәсілдеме, ақпараттарды жүйелеу, өңдеу.

Қорытынды: Стратегиялық жоспарлау тетігін қалыптастыру кезінде аумақты дамытудың барлық қатысушыларының: биліктің, бизнестің, қоғамның мүдделерін сақтау қажеттілігін ескеру қажет. Бірақ билік әрқашан қозғаушы күш болып табылады: ол өзінің қызығушылығын жүзеге асырып қана қоймай, кәсіпорындардың тиімді жұмыс істеуіне, аумақтың инвестициялық климатын жақсартуға жағдай жасайды және аймақтағы барлық серіктестер үшін тең бәсекелестік мүмкіндіктерді қамтамасыз етеді. Жақсы дамыған Стратегиялық жоспар жыл сайын егжей-тегжейлі жоспарларды жүзеге асырудың негізі болып табылады. Бұл ретте стратегиялық жоспар көзделген даму стратегияларының орындалуына қандай да бір кепілдік болып табылмайтынын, тек таңдап алынған даму бағыттарын іске асыруға көмектесетін маңызды құрал болып табылатынын есте ұстаған жөн. Ол әрқашан оны жасау кезінде белгілі болған ақпаратқа негізделген.

Тұжырымдама: Осылайша, аймақтың аумақтық экономикасын басқару туралы айта отырып, біз басқарудың екі негізгі түрін қарастырамыз: қазіргі және стратегиялық. Басқарудың осы түрлерінің арасындағы айтарлықтай айырмашылықтарға қарамастан, оларда жалпы басқару субъектісі – мемлекеттік орган бар. Демек, аумақтық экономиканы басқарудың негізгі нысаны басқару органы шеңберіндегі ағымдағы және стратегиялық басқарудың үйлесімі болып табылады. Бұл тәсілді жүзеге асыру басқару органының ішкі құрылымын құруға, басқарудың әртүрлі түрлерін ұйымдастырудың ерекшеліктерін ескеруге өте мұқият қарауды қажет етеді. Ағымдағы және стратегиялық басқаруды біріктіруге бағытталған басқару құрылымдарын құрудың негізгі тәсілдеріне егжей-тегжейлі сипаттама беруге тырыстық.

Кілт сөздер: өңір, аумақтықтың экономикасы, стратегия, механизм, ақпарат, аумақтық әлеуметтік-экономикалық жоспарлау.

З.Н. Борбасова, Р.Е. Несипбаев, С.Н. Улаков, Н.С. Улаков

Совершенствование развития регионов с использованием механизмов текущего и стратегического управления территорией

Аннотация

Цель: Для успешного развития регионов нужны определенность и наличие консолидирующих идей по поводу будущего. Это важные потребности бизнеса и общества, которые удовлетворяются через механизм территориального социально-экономического планирования, прежде всего, стратегического планирования. В статье рассмотрено понятие стратегического управления, описаны отличия стратегического и текущего управления на примере управления отраслями социального блока. Также исследована сущность управления территориальным хозяйством региона, а также вопросы реализации жизнеобеспечения и социального обслуживания населения, совершенствования территориального хозяйства в целом, приобретение им новых качественных характеристик более высокого уровня.

Методы: При проведении исследования были использованы следующие методы: эмпирический, аналитический, синтетический и сравнительно-логический.

Результаты: Следовательно, основной формой управления территориальным хозяйством является сочетание текущего и стратегического управления в рамках органа управления. Реализация такого подхода требует очень внимательного отношения к построению внутренней структуры органа управления, учета особенностей организации разных видов управления. Попытаемся дать более развернутую характеристику основных подходов к построению структур управления, ориентированных на совмещение текущего и стратегического управления.

Выводы: При формировании механизма стратегического планирования следует исходить из необходимости соблюдения интересов всех участников развития территории: власти, бизнеса и общественности. Но движущей силой всегда выступает власть: она не только реализует свой интерес, но и создает условия для эффективного функционирования предприятий, улучшения инвестиционного климата территории, обеспечивает равные конкурентные возможности для всех партнеров в регионе. Грамотно разработанный стратегический план является основой для осуществления более подробных планов на каждый год.

Ключевые слова: регион, экономика территории, стратегия, механизм, информация, территориальное социально-экономическое планирование.

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Modeling and analysis of the mutual influence of the RUB / KZT and USD / KZT exchange rates: the period before the pandemic and as a result of the impact of COVID-19

Abstract

Object: to assess of the interdependence and mutual influence of the exchange rates of the RUB and USD against the tenge before the COVID-19 and during the period of its impact on the Kazakhstan's financial market.

Methods: the main research methods are regression modeling, the least squares method, analysis and generalization of methodological approaches of authors assessed the influence of various factors on the exchange rates of countries.

Findings: the COVID-19 introduced uncertainty in the formation of exchange rates of the RUB / KZT and USD / KZT. The strong direct relationship between the RUB / KZT and USD / KZT, which existed before the pandemic, as a result of the impact of COVID-19, was replaced by a negative and weaker correlation dependence.

Conclusions: the impact of the pandemic on the exchange rates of the ruble against the tenge and the dollar against the tenge is ambiguous, which reduces the degree of mutual influence of exchange cross-rates between the ruble and the US dollar even in countries that closely interact with each other. Further research is required to identify the factors that contributed to this change in the interdependence of the ruble / tenge and dollar / tenge.

Keywords: exchange rate, rate correlation, forecast intervals, pandemic, regression analysis, exchange rate volatility, rate elasticity.

Introduction

At present, the exchange rate is one of the fundamental factors indicating the state of the financial market, the country's competitiveness, and the financial security of the state. That is why the problems of currency regulation are becoming central and riveting the attention of both government bodies and financial market participants in general.

Strengthening the integration processes in the world financial market has led to an increase in the importance of the influence of external factors on the foreign exchange market of Kazakhstan: world prices for energy resources, investor expectations, volatility of world currencies. The instability of the world financial system, exposure to the influence of many external factors requires research into the issues of exchange rate volatility in Kazakhstan.

Since Russia remains one of the main strategic and trading partners of Kazakhstan, changes affecting the Russian market are directly reflected in our country, which also affects the formation of the exchange rate of the tenge against the Russian ruble. Moreover, it should be borne in mind that both countries are influenced by the same external factors, for example, oil prices, foreign policy, dependence on the US dollar. Of course, we are not talking about a one hundred percent correlation between the Russian ruble and the Kazakhstani tenge. However, a close connection can still be traced.

Since the tenge is closely dependent on the US dollar, it becomes necessary to study the relationship and the degree of influence of American financial policy on the exchange rate of the Kazakh national currency. This need is also intensified due to the fact that the pandemic had a significant impact on the development of the economies of all countries of the world, since the exchange rate ultimately has a significant impact on macroeconomic indicators: from inflation to the balance of payments. As a result of this influence, it

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becomes necessary to study the positions of the tenge against the US dollar and the Russian ruble in terms of a new degree of influence.

Hypothesis 1: if we consider the tenge as the base of assessment, then based on the study of the correlation between the tenge and the ruble and the tenge against the US dollar, it is possible to assess the degree of interdependence of the RUB / KZT and USD / KZT exchange rates.

Hypothesis 2: the presence of a relationship between exchange rates allows us to determine the forecast intervals and elasticity of exchange rates in relation to each other.

Hypothesis 3: since the pandemic had a significant impact on the economies of the countries of the world, it also made appropriate adjustments to the correlations between the RUB / KZT and USD / KZT exchange rates.

Literature Review

For a long period of time, the issues of the exchange rate, the assessment and analysis of the influence of various factors on it have been considered by many authors. At the same time, various statistical and econometric methods of analysis were used. Most of the works examined the influence of macroeconomic factors on the exchange rates of individual countries. At the same time, there are works of a more global nature, covering studies of several countries.

Thus, Twarowska K. and others (Twarowska, 2000) analyzed the main factors determining the exchange rate of Poland against the euro. The analysis showed that the balance of payments deficit, inflation rate, interest rate and government deficit are the most significant factors influencing the exchange rate..

Sh.Parveen, A.Qayyum and Kh.M. Ismail applied a simple linear regression model with the usual least-order method (OLS) to analyze the factors affecting the viability of the exchange rate in Pakistan (Sh.Parveen, A.Qayyum and Kh.M. Ismail, 2012). According to the results of the analysis, it was revealed that inflation is the main factor, the second important variable that leads to a greater change in the exchange rate is economic growth, and the order of exports and imports in variations is in the third and fourth positions.

V. Dodonov considered the relationship of the tenge exchange rate with oil prices and the Russian ruble exchange rate, analyzing the dynamics of key items of the balance of payments of Kazakhstan in order to identify the most closely correlated with the tenge exchange rate current transactions and financial account items (V, Dodonov, 2014).

Ramasami R. et al. Evaluated the impact of macroeconomic variables on exchange rates of three different countries using the bootstrapping method. The results showed that psychological factors predominated in economic variables affecting exchange rates (Ramasamy, R., 2015).

G.R. Oganessian considered the relationship between the ruble exchange rate and key macroeconomic indicators in Russia through statistical and econometric analysis, as a result, confirming the strong dependence of the ruble exchange rate on oil prices (G.R. Oganessian, 2016).

Vidyavati, B. et al. Assessed the main macroeconomic indicators affecting the exchange rate. The analysis revealed the presence of a negative relationship between GDP, inflation, interest rate and external debt with the exchange rate (Vidyavathi, B., 2016).

Sheetal Maurya examines the impact of various economic variables on the exchange rate of India's national currency against the US dollar. The analysis revealed a close relationship between imports and the exchange rate between the rupee and the US dollar (Sheetal, 2017).

During a pandemic, the issue of the exchange rate is also of interest to various authors. In particular, studies by some authors show that the effectiveness of foreign exchange markets is difficult to assess (Katusiime et al., 2015), and it is quite difficult to identify any clear pattern of changes and the effectiveness of exchange rates, but it can be tracked especially during crisis situations (Levich et al. al., 2019). The authors also investigated the impact of the Covid-19 pandemic on exchange rates in Turkey, the results of which showed that the emergence of new foci of the disease causes uncertainty in the economy, which leads to significant fluctuations in the exchange rate of the Turkish national currency against other currencies of countries (Eda Dineri et al. , 2020).

Hoffman et al. stated in their study that the Covid-19 epidemic has enlarged and complicated the markets of emerging market economies, especially in developing countries (Hoffman et al., 2020). In his study, he found that the dynamics of capital flows during the pandemic increased the negative impact of high credit margins on domestic exchange rates (Kouma, H., 2020).

F.Asalam et al. Applied multifractal analysis of fluctuations without a trend (MF-DFA) to assess the performance of foreign exchange markets during the initial and ongoing period of COVID-19, which brought down the global financial markets (F.Asalam, 2020). At the same time, the issues of mutual influence of cur-

rency pairs that have a powerful impact on the development of the country's economy have not yet been considered. This is especially true for Kazakhstan.

Methods

Regression analysis was used as the main method of analysis, to estimate the parameters α and β of which the least squares method (OLS) was used. The elasticity coefficients and confidence intervals of the currency forecast were also estimated. In order to compare the behavior of currency pairs before the pandemic and as a result of the impact of COVID-19, the time period for the study was divided into two parts: until 2019 and from 2019 to the present. Regression analysis was carried out for each interval separately.

Regression analysis is used to visualize the form of the relationship between the studied economic indicators. The set of points of effective and factorial features forms a correlation field, on the basis of which it is possible to put forward a hypothesis about the presence of a linear relationship between all possible values of X and Y (I.M.Borkovskaya et al., 2018)

The estimated regression equation is formed as follows:

$$y = \beta x + \alpha + \varepsilon_i \quad (1)$$

where: ε_i – observed error estimates;

α и β – parameters of the regression model to be determined.

In turn, the LSM system can be written as follows:

$$S = \sum_{i=1}^n (y_i - y_i^*)^2 \rightarrow \min \quad (2)$$

In this case, the system of normal equations will have the following form:

$$\begin{cases} \alpha n + \beta \sum x = \sum y \\ \alpha \sum x + \beta \sum x^2 = \sum yx \end{cases} \quad (3)$$

Many authors use regression coefficients in the scoring equation to directly assess the influence of factors on an outcome trait (Anusha, 2020). However, in our opinion, it is undesirable to do this because in most cases there is a difference in the units of measurement of the effective indicator y and the factor attribute x, and there is also an error. For these purposes, it is most convenient and significant to estimate the elasticity coefficients, which show how many percent, on average, in the aggregate, the result y will change from its average value when the factor x changes by 1% from its average value. Thus, the coefficient of elasticity is estimated as follows:

$$E = \beta \frac{\bar{x}}{\bar{y}} \quad (4)$$

The quality of the regression equation in our case was estimated by estimating the error of the absolute approximation:

$$\bar{A} = \frac{\sum |y_i - y_x| / y_i}{n} 100\% \quad (5)$$

If the approximation error is within 5% -7%, then this indicates a good fit of the regression equation to the original data. The t-test and the F-test were also evaluated to assess the significance of the obtained regressions. The data for the models was taken from Bloomberg.

Results

As mentioned earlier, a regression model was applied to assess the mutual influence of the RUB / KZT and USD / KZT currency pairs. To begin with, let's estimate the degree of interdependence in the period before the pandemic (model A). Based on the calculations, the following system of equations was obtained:

$$\begin{cases} 56\alpha + 287.634\beta = 18468.57 \\ 287.634\alpha + 1553.591\beta = 99808.541 \end{cases}$$

From this system, we calculate the empirical regression coefficients, which are equal to $\beta = 64.9236$ and $\alpha = -3.6721$.

As a result, the empirical regression equation has the following form: $y = 64.9236x - 3.6721$

The coefficient of elasticity in this case will be equal to:

$$E = 64.924 \frac{5.136}{329.796} = 1.011$$

Since the elasticity coefficient is higher than 1, the RUB / KZT currency pair significantly affects the USD / KZT currency pair, that is, if the tenge / ruble exchange rate changes by 1%, the tenge / US dollar exchange rate will change by more than 1%.

Let us estimate the approximation error:

$$\bar{A} = \frac{2.401}{56} 100\% = 4.29\%$$

Based on the data obtained, the calculated values deviate from the actual values on average by 4.29%, which is less than 7%, which means that the resulting equation is statistically significant and can be used as a regression. The correlation index is:

$$corr = \sqrt{\frac{321254.639}{338135.26}} = 0.975$$

The correlation index shows a high degree of relationship between the exchange rates of the ruble and the US dollar against the tenge, almost 1.

Calculate t-tests using empirical regression coefficients:

$$t_{\alpha} = \frac{-3.672}{10.667} = 0.34 \quad t_{\beta} = \frac{64.924}{2.025} = 32.06$$

Since $0.34 < 2$, we accept the hypothesis that this coefficient α is equal to zero, that is, in this case, the coefficient α can be neglected.

Since $32.06 > 2$, the statistical significance of the regression coefficient β is confirmed.

Let us estimate the confidence interval for the regression coefficients with a probability of 95%:

$$-3.672 - 2 * 10.667$$

$$-3.672 + 2 * 10.667$$

Therefore, it is possible to assert with 95% probability that α will be within the limits (-25.006;17.662).

$$64.92 - 2 * 2.025$$

$$64.92 + 2 * 2.025$$

Therefore, it is possible to assert with 95% probability that β will be in the range (60.873;68.974).

Thus, according to the model for assessing the mutual influence of exchange rates in the period before the pandemic, the results are presented in Table 1.

Table 1. Parameters of model A (before the pandemic)

Source of variation	Sum of squares	Number of degrees of freedom	Elasticity coefficient	Correlation index	t-criteria	F-criteria	R ²	Approximation error
Model (explained)	321254.639	1	1.011	0.975	0.34 32.06	1027.67 3	0.9501	4.29
Residual	16880.62	54	-	-	-	1	-	-
General	338135.26	56-1	-	-	-	-	-	-

Note – compiled by the authors on the basis of calculations and Bloomberg data

Model A data allows you to build a scatter diagram (Figure 1).

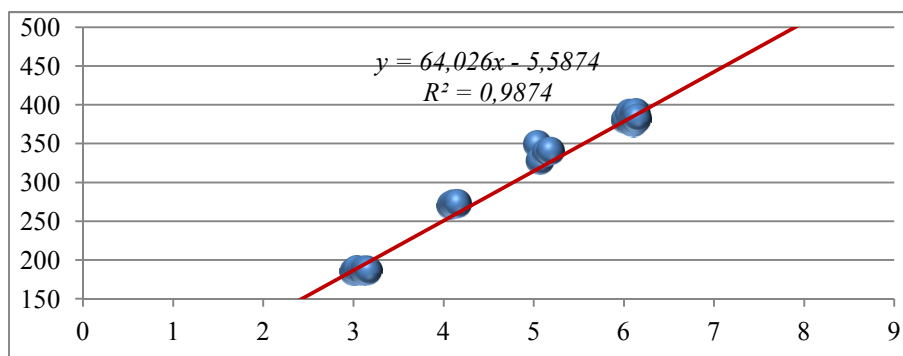


Figure 1. Diagram of the scattering of the mutual influence of the exchange rates of the ruble and the US dollar against the tenge before the pandemic (model A)

Note – compiled by the authors on the basis of calculations and Bloomberg data

Let us estimate the parameters of the regression model reflecting the mutual influence of exchange rates as a result of the impact of COVID-19 on the financial markets of Russia, the United States and Kazakhstan (model B). The data for the calculations were also taken from Bloomberg.

For data on the RUB / KZT and USD / KZT exchange rates taken during the pandemic, the system of equations will be as follows:

$$\begin{cases} 41\alpha + 227.78\beta = 17488.79 \\ 227.78\alpha + 1265.674\beta = 97156.317 \end{cases}$$

The solution of this system allows you to obtain the regression coefficients: $\alpha = 543.796$ и $\beta = -21.103$, as a result, the empirical regression equation is: $y = -21.103x + 543.7961$

The coefficient of elasticity is:

$$E = -21.103 \frac{5.556}{426.556} = -0.275$$

Since the elasticity coefficient is lower than 1, the RUB / KZT currency pair does not significantly affect the USD / KZT currency pair, that is, if the tenge / ruble exchange rate changes by 1%, the tenge / US dollar exchange rate will change by less than 1%.

Let us estimate the approximation error:

$$\bar{A} = \frac{0.207}{41} 100\% = 0.51\%$$

Based on the data obtained, the calculated values deviate from the actual values on average by 0.51%, which is less than 7%, which means that the obtained equation is statistically significant and can be used as a regression. The correlation index is:

$$corr = \sqrt{\frac{96.554}{374.75}} = 0.508$$

The correlation index shows a low, but significant degree of relationship between the ruble and the US dollar against the tenge, slightly above 0.5.

Calculate t-tests using empirical regression coefficients:

$$t_{\alpha} = \frac{543.796}{31.869} = 17.06 \quad t_{\beta} = \frac{-21.103}{5.736} = 3.68$$

Since $17.06 > 2.329$, the statistical significance of the regression coefficient α is confirmed.

Since $3.68 > 2.329$, the statistical significance of the regression coefficient β is confirmed.

Let us estimate the confidence interval for the regression coefficients with a probability of 95%:

$$543.796 - 2.329 * 31.869$$

$$543.796 + 2.329 * 31.869$$

Therefore, it is possible to assert with 95% probability that α will be within the limits (469.573;618.019).

$$-21.1 - 2.329 * 5.736$$

$$-21.1 + 2.329 * 5.736$$

Therefore, it is possible to assert with 95% probability that β will be in the range (-34.462;-7.744).

Thus, according to the model for assessing the mutual influence of exchange rates during the period of a pandemic, the results are presented in Table 2..

Table 2. Parameters of model B (during a pandemic)

Source of variation	Sum of squares	Number of degrees of freedom	Elasticity coefficient	Correlation index	t-criteria	F- criteria	R ²	Approximation error
Model (explained)	96.554	1	-0.275	-0.5076	17.06 3.68	13.536	0.2577	0.51
Residual	278.19	39	-	-	-	1	-	-
General	374.75	41-1	-	-	-	-	-	-

Note – compiled by the authors on the basis of calculations and Bloomberg data

Model B data allow you to build a scatter diagram (Figure 2).

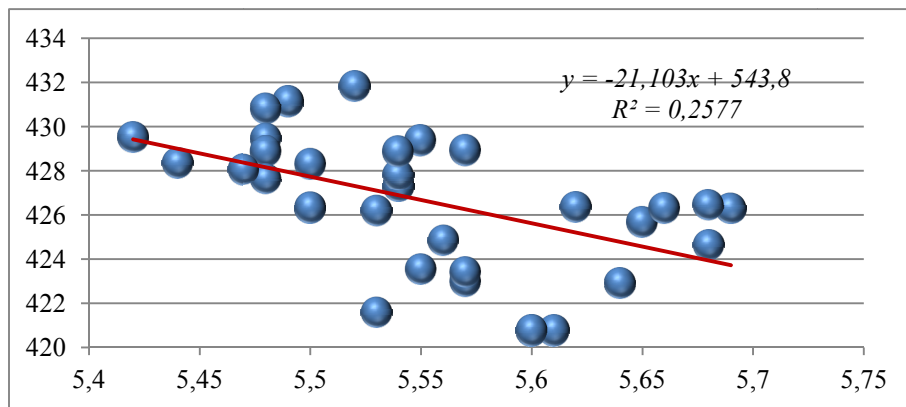


Figure 1. Diagram of the scattering of the mutual influence of the exchange rates of the ruble and the US dollar against the tenge during a pandemic (model B)

Note – compiled by the authors on the basis of calculations and Bloomberg data

Thus, on the basis of regression models, data were obtained on the mutual influence of the RUB / KZT and USD / KZT currency pairs before the COVID-19 pandemic and during the period of its action and impact on the financial markets of the countries of the world.

Discussions

The analysis shows that the pandemic has made its own adjustments in the exchange rates of the tenge against the ruble and the US dollar, as well as in the degree of their interdependence. In Figure 2, the change in the influence of currency pairs in model B is obvious.

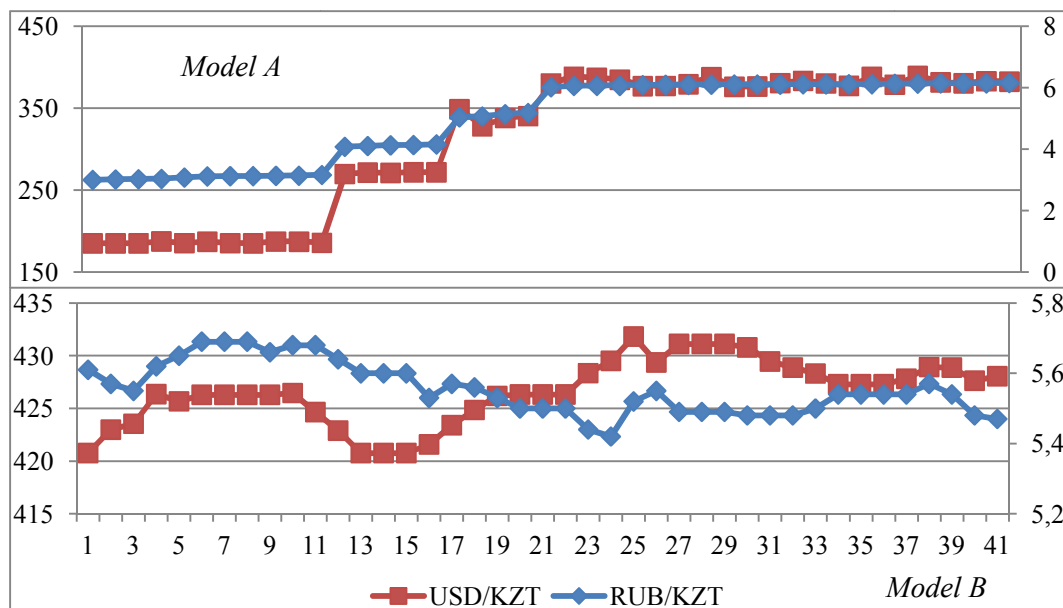


Figure 2. Interaction of the exchange rates of the ruble and the US dollar against the tenge before the pandemic and during the COVID-19 period

Note – compiled by the authors on the basis of calculations and Bloomberg data

The results of evaluating model A show that in the studied situation, 95.01% of the total variability in USD / KZT is explained by the change in RUB / KZT. It was also found that the parameters of the model are statistically significant. In the period before the pandemic, the impact of RUB / KZT on USD / KZT was much more significant. Thus, the assessment of the dependence of these currency pairs showed that if the exchange rate of the tenge against the ruble changes by 1%, the exchange rate of the tenge against the US

dollar will change by more than 1%. The obtained estimates of the regression equation allow us to determine the forecast boundaries in the period before the pandemic. So, if the tenge / ruble rate were 6, then the tenge / US dollar rate would be in the range from 344.66 to 427.08 tenge and with a 95% probability would not go beyond the specified limits.

However, the impact of the pandemic on the dependence of exchange rates has led to certain changes. If earlier the growth of the exchange rate of the tenge against the ruble led to an increase in the exchange rate of the tenge against the US dollar, now the RUB / KZT currency pair does not significantly affect the USD / KZT currency pair, that is, if the exchange rate of the tenge against the ruble increases by 1%, the exchange rate tenge against the US dollar will decrease by less than 1%. Thus, with a unit value of 6 tenge, the US dollar will be in the range from 408.52 to 425.83 tenge and with a 95% probability it will not go beyond these limits.

At the same time, the degree of dependence of these exchange rates decreases. If before the pandemic the correlation coefficient was 0.97, that is, it showed an almost absolute, moreover, positive correlation, then as a result of the influence of the pandemic, the correlation coefficient decreased to 0.5, and with the reflection of the inverse relationship.

Conclusions

The results obtained allow us to confirm the hypotheses put forward earlier. In particular, if we consider the tenge as a base of assessment, then based on the study of the correlation between the tenge and the ruble and the tenge against the US dollar, one can estimate the degree of interdependence of the RUB / KZT and USD / KZT exchange rates. Indeed, the assessment showed the ruble's dependence on the US dollar.

The presence of a relationship between exchange rates allows you to determine the forecast intervals and elasticity of exchange rates in relation to each other. As a result of the analysis, it was determined how the exchange rate of the tenge against the US dollar will change if the ruble rate is 6 tenge in the period before the pandemic and as a result of its impact on the financial market of Kazakhstan.

Since the pandemic had a significant impact on the economies of the countries of the world, it made corresponding adjustments to the correlations of the RUB / KZT and USD / KZT exchange rates. As the analysis has shown, the correlations between these exchange rates have changed significantly: the dependence has become weaker and negative.

Thus, the analysis performed allows us to show that the impact of the pandemic on exchange rates is ambiguous, which weakens the degree of mutual influence of exchange rates on each other, even in closely interacting countries. This analysis requires further research on the factors that had such an impact on the relationship between the RUB / KZT and USD / KZT exchange rates.

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RUB / KZT және USD / KZT айырбастау бағамдарының өзара әсерін модельдеу және талдау: пандемияға дейінгі кезең және COVID-19 әсерінің нәтижесі ретінде

Аңдатпа

Мақсаты: COVID-19 пандемиясына дейін және оның Қазақстанның қаржы нарығына әсері кезеңінде теңгеге қатысты рубль мен АҚШ долларының айырбас бағамдарының өзара тәуелділігі мен өзара әсерін салыстырмалы бағалауды жүзеге асыру.

Әдістері: Зерттеудің негізгі әдістері-регрессиялық модельдеу, ең аз квадраттар әдісі, әртүрлі факторлардың елдердің валюта бағамдарына әсерін бағалаған әртүрлі авторлардың теориялық және әдіснамалық тәсілдерін жалпылау және талдау әдістері.

Қорытынды: Пандемия рубль мен АҚШ долларының теңгеге қатысты айырбас бағамдарының қалыптасуына белгісіздік әкелді. Covid-19 әсерінің нәтижесінде пандемияға дейін болған RUB / KZT және USD / KZT валюта жұптары арасындағы күшті тікелей тәуелділік теріс және әлсіз корреляциялық тәуелділікпен алмастырылды.

Тұжырымдама: Пандемияның рубльдің теңгеге және доллардың теңгеге айырбастау бағамдарына әсері бір мәнді емес, бұл тіпті бір-бірімен тығыз өзара іс-қимыл жасайтын елдердің өзінде рубль мен АҚШ долларының айырбас кросс-бағамдарының өзара әсер ету дәрежесін төмендетеді. Рубль / теңге және доллар / теңге валюта жұптарының өзара тәуелділігінің осындай өзгеруіне ықпал еткен факторларды анықтау үшін одан әрі зерттеулерді талап етеді.

Кілт сөздер: валюта бағамы, бағамдардың корреляциясы, болжам аралықтары, пандемия, регрессиялық талдау, валюта бағамының құбылмалылығы, бағамның икемділігі.

Э.А. Рузиева, А.М. Нургалиева, З.К. Есымханова, Л.А. Чайковская

Моделирование и анализ взаимовлияния обменных курсов RUB / KZT и USD / KZT: период до пандемии и как результат воздействия COVID-19

Аннотация

Цель: Осуществить сравнительную оценку взаимозависимости и взаимовлияния обменных курсов рубля и доллара США по отношению к тенге до пандемии COVID-19 и в период ее воздействия на финансовый рынок Казахстана.

Методы: Основными методами исследования выступают регрессионное моделирование, методы наименьших квадратов, анализа и обобщения теоретико-методологических подходов различных авторов, проводивших оценку влияния различных факторов на валютные курсы стран.

Результаты: Пандемия COVID-19 внесла неопределенность в формирование обменных курсов рубля и доллара США по отношению к тенге. Сильная прямая зависимость между валютными парами RUB / KZT и USD / KZT, которая существовала до пандемии, в результате воздействия COVID-19, сменилась отрицательной и более слабой корреляционной зависимостью.

Выводы: Влияние пандемии на обменные курсы рубля к тенге и доллара к тенге неоднозначно, что снижает степень взаимного влияния обменных курсов рубля и доллара США даже в странах, тесно взаимодействующих друг с другом. Требуются дальнейшие исследования для выявления факторов, которые способствовали такому изменению взаимозависимости валютных пар рубль / тенге и доллар / тенге.

Ключевые слова: обменный курс, корреляция курсов, интервалы прогнозов, пандемия, регрессионный анализ, волатильность обменного курса, эластичность курса.

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Role and development of personal husbandries in solving employment issues in the region

Abstract

Object: The content of the article is intended for agriculture to contribute to the solution of a social problem – employment of the population.

Methods: It provides for the functioning of the population's economy in the agriculture of the Republic of Kazakhstan and its share in the production of agricultural products today. It describes the principle of operation, quantitative indicators of population farms, the share in the production of agricultural products. Quotes about the conduct of numerous studies on the self-employment of the agricultural population.

Results: Farms of the population explained the current situation in agriculture, which has its own share in the employment of the rural population. However, there are no complete targeted comprehensive studies for the study of rural employment. In this regard, the validity of the study and analysis of this topic is given. By providing quantitative data, the public has proved that agriculture has a significant share in the production of agricultural products.

Conclusions: This covered the employment of the rural population, which in the competition can be found in the interpretation of their income. This explains that rural population is self-employed and earns on household farms.

Keywords: agriculture, agricultural enterprises, public, private subsidiary farms, peasant (farm) farms, self-employment, employed, agricultural enterprises, livestock, crop production.

Introduction

During the transition to a market economy and with the decline in production in the agro-industrial complex, the problem of employment and income of the rural population has sharply worsened. Due to the lack of new jobs and extremely limited scope of employment in other sectors of agriculture, a significant part of the rural population of working age was forced to work on their own farms. Population farms (personal subsidiary farms) proved to be the most stable and viable form of management in the agricultural sector, which is due to the historically established way of rural life, and, in addition, the most complete implementation of economic independence and responsibility (Shinet, Myrzaliev, Ydyrys, 2016).

The role of households in rural areas has increased significantly in recent years. The level of development of this sector of the economy depends not only on the provision of rural residents with food, but also on the employment rate of labor resources. The decrease in the unemployment rate and the growth of social protection for the unemployed dictate the need to develop and implement a program to support households, adopt special programs that will provide social security for those employed in this sector of the economy, if they do not have another job.

The lack of an effective system for regulating employment in agriculture has a negative impact on rural demography, working conditions and social status of rural workers, and creates difficulties in providing the agro-industrial complex with qualified personnel.

As an integral part of a multi-layered agricultural economy, households provide employment, increase the income of rural families, and make a significant contribution to food security. As an economic entity consisting of one or more individuals United by relations of reproduction and realization of human potential,

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living together and leading a common economy, the main goal is to meet the socio - economic needs of its members.

Literature Review

Many aspects of the problem were considered in the works of A.Smith, D.Ricardo, FR.Quesnay, W.Jevons, A.Pigou, J.Keynes and others. Issues of employment and the formation of the labor market are considered in the works of V.A.Bogdanovsky, JI.B.Bondarenko, B.P.Pankov, A.B.Soskiev, Yu.N.Shumakov, A.B. Shuvaev, V.E. Gimpelson, R.I.Kapelyushnikov, S.Ivanov and others. Theoretical and practical aspects of cooperation in the agricultural sector are studied in the works of A.V.Chayanov, M.I. Tugan-Baranovsky and other Russian scientists and cooperative figures of the XX century. Certain aspects of this problem are widely covered in the works of A.P.Zinchenko, F.K.Shakirov and N.Ya.Kovalenko. Their research provided a good basis for research in this area.

Despite the large number of studies devoted to the problems of employment of the rural population and the study of the development of farms, we note that integral comprehensive research on rural employment, especially employment in the economy of the population is currently clearly insufficient, which makes the stability of the agricultural economy vulnerable. There is no scientifically-based concept for the formation and regulation of rural employment, and the positive experience of creating sustainable models of rural employment in households has not been sufficiently studied (Myrzaliev, Shinet, 2016).

Method

Various methods were used during study. The study examined the stages of various foreign models of development of the personal husbandries in the field of agriculture. When analyzing the development of alternative personal husbandries abroad, the current state and support measures, casual methods of analysis were used. Consolidation, logical and comparative methods have been used effectively in the study of differences and general similarities among the public in several countries. Economic and statistical methods are widely used in the analysis and assessment of the current state of economic equivalents of the population as well as trends in development, abstract and logical method-in identifying problems and developing proposals for measures of state regulation and support of household equivalents abroad.

Results

The economic basis of the economy of the population is private ownership of factors of production: means of production, land, labor, etc. The family itself and its members are both producers and consumers of manufactured products. The peculiarity of households is that they allow using the labor opportunities of almost all categories of the rural population. Characteristic features of the functioning of households are freedom of economic activity, independence in making economic decisions and full economic responsibility for the results of their work. In official statistics, household income is not taken into account, because for objective reasons there is no accounting for their economic activities. At the same time, the activities of households bring considerable benefits to society: first, the subjects of economic activity are self-employed; second, the population independently meets their needs for food. Under these conditions, the state saves resources for its own business activities by providing support to other industries. It should be noted that the role, place of population farms and their significance in industrial and social relations are ambiguous and constantly change depending on objective and subjective factors. So, if earlier the purpose of the existence of households was to provide rural residents mainly only with food, now the functions of households have significantly expanded, and in addition to economic, they have begun to solve social and environmental problems. Due to the naturally formed and in recent years deepened division of production between agricultural organizations and farms of the population, especially clearly expressed in crop production - the vast majority of potatoes, vegetables, fruits are produced by the population, and grain, technical, forage crops - by agricultural organizations. The ratio of these categories of farms and the dynamics of their share in gross agricultural output is influenced, and will continue to be influenced, by the productivity and gross harvest of crops prevailing in a particular category of farms, the labor intensity of production. Being a special form of economic life in rural areas, the population's farms are traditionally supplemented by agricultural organizations. Therefore, it is wrong to set them against each other. Since the population's farms participate in the social division of production and labor in the agricultural economy, the situation with these farms cannot be considered outside of these links with other sectors and socio-economic forms of management in the agricultural sector and the economy as a whole. All this increases the interest in the population's farms, their socio-economic and resource potential as a subject and object of management. In our opinion, the potential of the population's farms should be understood as a system of interrelated, mutually dependent and interacting factors that ensure effective and sustainable development of the population's farms, both in modern conditions

and in the future. It is quite clear that due to the naturally developed and in recent years deepened division of production between agricultural organizations and households of the population, especially clearly expressed in crop production, the vast majority of potatoes, vegetables and fruits are produced by the population, while grain, technical and fodder crops are produced by agricultural organizations. The ratio of these two categories of farms and the dynamics of their share in gross agricultural output is influenced, and will continue to be influenced, by the productivity and gross harvest of crops prevailing in a particular category of farms, the labor intensity of production. The division of production between agricultural organizations and households is not limited to differences in product specialization, both in the country as a whole and in individual regions. Marketability and self-sufficiency are also taken into account. Agricultural organizations directly contribute to the country's food supply, and the population's farms meet local food needs. During the study period, the overall role of small business has decreased, especially in the development of households (Yesbolova, Ibraimova, Mergenbaeva, 2016).

A significant increase in production on household and other plots of private farms can be explained by the response of the population to the deterioration of the economic situation in agricultural production, the reduction or even complete elimination of collective production. The process of moving the labor activity of the rural population from the public sector to the private sector is mainly due to: - a decrease in wages and their share in the total family budget; – lack of alternative employment, i.e. the narrow scope of employment in rural areas. Employment in a personal subsidiary farm has become a form of self-employment and provides almost half of the total family income.

Any work activity of a person is determined by motivation, which reflects real needs, interests, values and value orientations. It creates real reasons for people's actions, achievements, and possible ways to meet their needs and interests. When forming a motive, a person evaluates their capabilities and weighs the significance of various needs and their priorities. For unemployed citizens, the need for recognition and prestige takes a back seat. The lack of a permanent income, family and children put the first place motives for providing, and to survive the adverse situation in the absence of alternative forms of employment, unoccupied citizens are forced to choose self-employment in a personal subsidiary farm (in the household) (Valiev, Koshlich, Mussayeva, 2018).

The main incentive for the population's farms is the production of basic food products for their own consumption. Households mostly generate income in kind, and if part of the output is sold, then in cash. Thus, the population's farms partially compensate for the deficit of funds for the reproduction of labor and the population as a whole, which has developed due to low wages in rural areas. Farms of the population have limited opportunities for Autonomous development and can develop mainly through integration with large-scale production. The development of the population's economy depends on the financial condition of agricultural organizations. In economically strong farms, the share of household income in total family income is significantly lower than in insolvent agricultural organizations. However, in a crisis, peasant farmsteads become not only a condition for self-sufficiency in food, but also the main source of income, a means of survival for rural residents (Yesbolova, Mergenbaeva, Abdikerimova, Kydyrova, 2016).

The development of agriculture in the country is directly related not only to the employment of certain types of crop and animal husbandry, depending on the climatic and soil conditions on its territory, but also to the strict implementation of targeted trends of agricultural producers and well-formed legal norms. Turkestan region is one of the most advanced in the production and processing of agricultural products, depending on the geographical location and climatic features. Since it is the hottest in terms of weather conditions, the main center of cotton growing, as well as an intensive irrigated agricultural and livestock zone in the Republic.

Turkestan region is one of the largest regions of the Republic, bordering on the East with Zhambyl region, in the North with Karaganda region, in the West with Kyzylorda region, in the South with the state of Uzbekistan. The territory of the region is 116.2 thousand square kilometers, and the population - a zone with a population of about 2.0 million people.

According to the administrative-territorial structure of the region, there are 7 cities, 15 districts, and 836 villages (table 1). The regional center is the city of Turkestan, which has a history of more than 1500 years. Since the second half of the XX century, it has become a major industrial, educational and cultural center, the center of domestic and foreign tourism.

Currently, in the Republic of Kazakhstan, the population tends to actively develop farms. As of January 1, 2019, there were 254,490 households in the Turkestan region.

Agriculture is an integral part of the agricultural economy. It is based on the use of resources and labor potential of rural families. To determine the role of the public economy in the development of agricultural production, it is necessary to study quantitative data on the development of the population's economy in certain areas.

The population of the Turkestan region was 1973.3 thousand people, the average annual number of rural population in 2018 was 1574.2 thousand people. In other words, this is 80.5% of the region's population. This rural population as of 2018, lives in 932 villages.

The economic function of the population's economy is one of the main producers of food products of the rural population, an additional reserve for increasing food resources. From a social point of view, the public is one of the sources of income growth for the rural population and provides employment for a significant part of it. At the expense of the population's economy, most of the family's income is formed, and agricultural labor education of the younger generation is formed. In addition, the farms of the population make it possible to effectively use the additional labor resources of the village: the Work of the elderly, teenagers, households and the unemployed.

Table 1. Administrative divisions for 2018

Regions	Territory, thousand. square, km	Areas	City			Human settlement	
			in total	the field strength values	district-value	settlements	villages
Republic of Kazakhstan	2724,5	177	87	38	47	26	6693
The Turkestan region	116,2	13	7	1	6	-	932

Note-prepared by the author based on the source

The structure of gross output of agricultural, forestry and fisheries products (services) by farm category is shown as a diagram in figure 1. The diagram clearly shows the volume of gross output of agricultural, forestry and fisheries products (services) in the category of population economy.

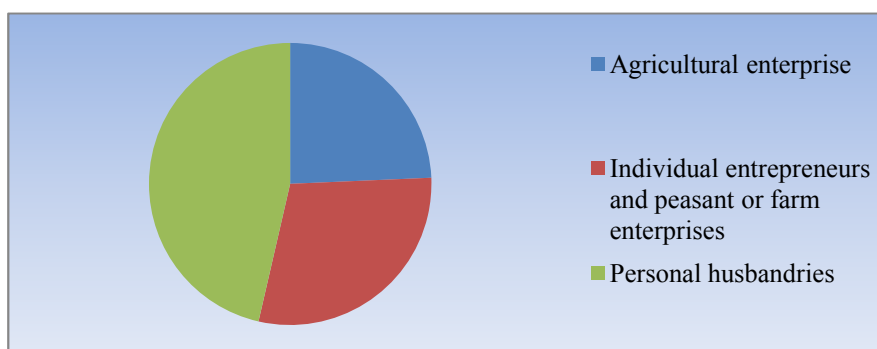


Figure 1. Structure of gross output of agricultural, forestry and fisheries products (services) by category of farms

Note-prepared by the author based on the source

In a multi-faceted economy, the most important place in agricultural production is occupied by farms of the rural population. This is due to the insufficient level of agricultural production in rural areas, the limited branches of labor of the rural population and the functioning of the personal economy due to low monetary incomes of rural families. They maintain their positions both during the period of economic growth and during the crisis of agricultural production. Therefore, in our opinion, they should be considered as a stable component of the agricultural sector. They will continue to play an important role in the formation and maintenance of rural society (Hachataryan, Kazaryan, 2020).

In the post-Soviet space, traditionally all households in rural regions were considered owners of land plots near their homes. Today, it is impossible to imagine the life of the rural population without farms formed under the household economy. Due to the fact that the rural population meets the needs for food, it has increased and even grown.

In recent decades, the role of households has increased. In the agro-industrial complex, the population becomes the organizational and legal form of production of the most flexible, sustainable and purposeful agricultural products (Avarskij, Gasanova, Gadzhieva, 2016).

In recent years, a significant role in the agricultural economy is played by households. Farms of the population have always been a source of life support for the rural population. But the essence of the population's farms not only provides the rural population with food necessary for life, but also during the agrarian reforms, they became a source of additional income as a result of the work of the rural population. The form of preserving the social status achieved in the pre-crisis period for the rural population is the result of the factor of reducing poverty in rural areas (Yesbolova, Maciejczak, Ibraimova, Akhelova, 2016).

Currently, agriculture is an integral part of the agricultural sector. Of course, the main share in the formation of the food Fund should be the social method of production. However, this industry has been reducing agricultural production every year since the beginning of economic reforms. Farms the population has quickly adapted to the new conditions and annually increases both the number of livestock and production.

Farms of the population specialize mainly in raising animals. In the following table (table 2), as of January 1, 2018, the following types of livestock are developed by volume: sheep, cattle, horse, camel, poultry.

Table 2. The number of varieties of cattle breeding in the farms of the population of the Turkestan region (thousand heads) and their share in all categories of farms, as a percentage

The name of the show signal	Years										average specific weight, %
	2014		2015		2016		2017		2018		
	quantity	specific weight, %	quantity	specific weight, %	quantity	specific weight, %	quantity	specific weight, %	quantity	specific weight, %	
cattle	703,6	91,2	708,5	90,2	743,2	89	806,0	88	857,0	86,2	88,9
cows	295,5	91,8	315,7	90,5	328,9	89,06	362,5	87,7	394,5	88,1	89,4
sheep and goats	2938,2	79,5	2963,5	80,1	2993,7	79,5	3 124,9	78,2	3119,1	76,3	78,7
horses	173,8	84,4	179,6	68,1	223,4	75,2	250,0	84,2	269,5	84,2	79,2
camel	12,1	56,8	12,1	54	12,7	49,3	12,5	48,2	13,5	48,2	51,3
poultry	1141,0	68,7	1145,5	67,1	1106,5	65,1	1163,6	61,7	1207,1	58,9	64,3

Note-prepared by the author based on the source

The number of livestock varieties belonging to the population's economy on a regional scale and its share in all farms in percentage terms are listed. According to the average report for the last five years, the largest number of livestock on a regional scale is accounted for by households. Thus, of cattle – 88.9%, cows-98.4%, sheep and goats-78.7%, horses-79.2%, camels-51.3%, poultry-64.3% are managed by the population.

Based on the data of this table, the number of livestock and their specific weight in all categories of farms of the population of the Turkestan region are presented in the form of diagrams according to figure 2.

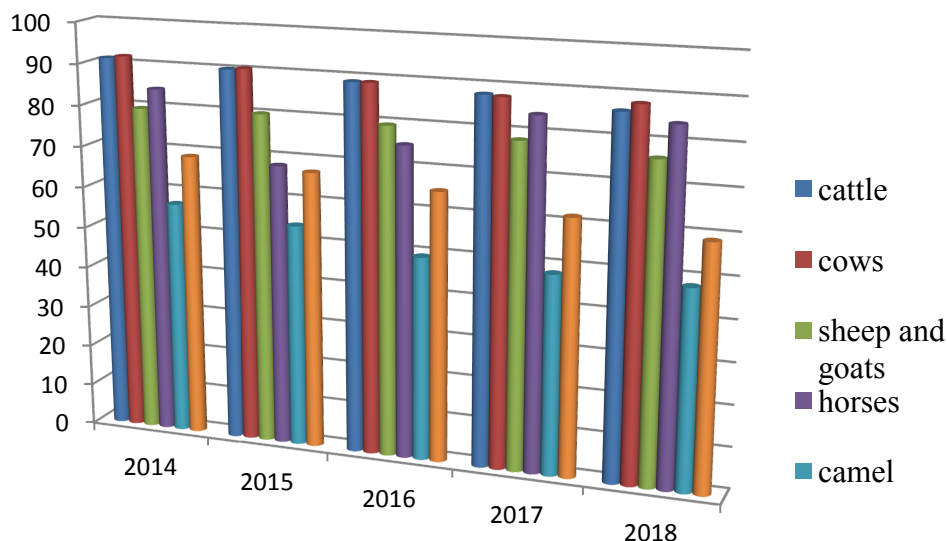


Figure 2. Proportion of livestock population in the Turkestan region in all categories of farms

Note-prepared by the author based on the source

In the course of studying the economy of the population, it should be noted that along with the analysis of changes in its statistical indicators, these changes also affect the social sphere. Thus, in the 10 years from

1992 to 2002, rural families were able to expand their economy by increasing production. In doing so, they eased the burden of "uselessness" in the main job and held back the accelerated decline in living standards. However, this strategy of strengthening the family economy did not implement everything. It is this public that is reflected in the classification of the rural population by economy. Among the "outsiders" found those who could not increase the load of their personal farms and did not want to increase

In recent years, the lumpen group was known, consisting of people who do not work both in their own economy and in the enterprise. They see random success and believe in help from the state. There is a demand for them from owners of farms of medium and large population as temporary workers. Owners of these farms are interested in prompt and relatively low-cost harvesting, forage, firewood. This situation is observed in all regions of the Republic, i.e. farm owners of the population hire workers from among their villagers for one-time work related to land cultivation and harvesting. In some cases, the relationship between owners and temporary employees was of a salaried nature.

The unemployed in rural areas formed their own adaptation model without the support of any state and without the participation of any employer. Speaking about the employment of the rural population, we should focus on two opposing trends. On the one hand, there is an increase in agricultural production and the activation of animal husbandry, which has increased the demand for the rural population and returned some of the forced unemployed to production. On the other hand, the head of the agricultural enterprise began to regulate labor relations, applying management methods in the composition of previously unused personnel.

This has led to the arrival of urban investors in rural regions, who buy shares in enterprises and invest in the development of production. And new owners, first of all, face the issue of efficiency, so they close good businesses and decide to lay off employees. Thus, the negative phenomenon of unemployment becomes active.

The consequences of the movement of urban capital to rural areas are both positive and negative. The rural population is experiencing certain risks. This threatens not only the preservation of normal jobs, but also the preservation of large-scale agricultural production in rural areas. As a result, urban investors acquire the production base of agricultural enterprises' infrastructure. Even ends with the mass sale of liquid assets. Then the new owners will feel the accuracy of attempts in rural areas to get financial results as a matter of urgency. As a result, the rural population loses everything – they become unemployed and lose the ability to conduct large-scale subsidiary farming (Shinet, 2015).

Thus, the growth of the population's farms from the state's agricultural policy depends on the socio-economic situation of the village, negative trends, including: due to unemployment, the population's farms lead to the use of themselves as an additional source of employment and family income. In our view, one of the goals of the state agricultural policy is to encourage the creation of cooperatives, provide legal support, allocate the necessary funds and prioritize support for such initiatives.

Also, in our opinion, it is necessary to review the strict financial policy in relation to agro-industrial production. State regulation of the agricultural market, especially price policy, plays an important role.

Discussion

Along with these social issues, the effective development of the population's economy is directly related to a number of issues of an economic and organizational nature, so there are problems that are faced daily, for example:

1. Difficulties of the public economy arising in connection with sales, storage, transportation and marketing of products.

One of the priority factors that negatively affect the economic management of the population is the sale of their products. The main constraints here are not the lack of demand for agricultural products and food, but the lack of sales infrastructure. Therefore, small producers are forced to sell their products to intermediaries at their own cost.

Profit from its implementation is received by speculators, but nothing from this will go to the budgets of all levels. The established intermediary structure encourages and buys products at reduced prices, which prevents the population from freely selling their products. This issue is related not only to the lack of a functioning sales structure that meets the interests of producers, but also to the lack of infrastructure for primary processing, storage and transportation of agricultural products. In order to eliminate this negative situation, it is necessary to develop the sphere of trade and intermediary services in a comprehensive manner and to expand contract relations with agricultural enterprises and processing enterprises (Grigoruk, Umbitaliev, 2017).

Small-family farming will not increase the competitiveness of domestic food products, both in the world market and in the domestic market, compared to imports. Because farmyards are not of the type where modern high-performance technologies are used. For this reason, they produce products with high cost and low quality.

The economy of the population is closely connected with newly organized economic structures with local governments. They are combined with these structures in General with localities and rural districts. However, the amount of aid that was previously traditional has been significantly reduced, since many agricultural enterprises (especially small ones) have themselves found themselves in a difficult financial situation, and the population's farms have not been able to provide their workers with a resource base.

The following types of assistance can be considered as a set of measures required by households:

- organization of storage, acquisition, sale of products;
- preparation and full provision of feed for livestock;
- allocation and use of pastures for grazing;
- organization of providing services for the use of pastures;
- veterinary and agronomic assistance;
- transport services (Plotnikov, 2013).

To provide these types of assistance, the following measures must be taken:

- creation of on-farm departments aimed at servicing the population at large economic capacities of agricultural enterprises to serve the population's farms;
 - - their relations with enterprises should be built on the basis of long-term contractual relations that enshrine the rights, duties and responsibilities of the parties;
 - otherwise, the organization of cooperatives created by households of the population to serve households of the population.

The advantages of cooperatives are the combination of a shared Fund of land plots. Cooperatives are created with local organizations for the purpose of mutual land processing, forage harvesting, and livestock grazing.

- difficulties arising from the unavailability of financial resources to households.

2. Difficulties arising from the unavailability of financial resources to households

At the beginning of the reforms, the state supported the direction of creating a multi-industry economy. And this direction is practically implemented. The equality of rights of all objects of agricultural producers is declared. This position has not been implemented, i.e. the population has never received state financial support in comparison with peasant farms (without taking into account the micro-credit provided to low-income families). Of course, this is discrimination over the household. In our view, the ideological and political atmosphere of family farming should be changed. Its essence is that the measures of state support will be applied to households on a par with large objects of management. Households that participate in government programs must have access to preferential loans, fertilizers and chemicals, seed and breeding stock, and so on.

The unavailability of financial resources that negatively affect the development of the economy of the population is directly related to the required high-level collateral for obtaining a loan. The lack of necessary financial resources leads to the use of simple technologies in the production of small businesses, morally and physically worn-out equipment and manual labor. This, in turn, reduces the efficiency of agricultural production and the small commodity sector of the agro-industrial complex (Kojtanova, Zholmuhanova, Al'peisova, 2017).

3. Difficulties arising in connection with the legal instability of the functioning of households.

This is a question that arises from the above-mentioned question, i.e. in connection with the financing of the economy of the population. The development of banking operations in the retail services market is directly due to a fairly high level of risk. This is directly related to the fact that people who are engaged in household activities are retired or do not have permanent jobs. Practically, banks are ready to provide villagers with a loan. Here, the main problem is not specifying the population's farms as an object of credit, whether they are a legal entity or an individual, an entrepreneur or a farm owner. For creditor banks, you need to issue all the necessary documents, the collateral base, the presence of a pledger, that is, everything. And those who are engaged in households of the population do not have any of the above, or official income. Therefore, the owner of the farm must not legalize their income if they want to get a loan. It, in turn, must be registered with the tax Committee (Fava Fabio., Gavrilesco, 2012).

One of the most pressing issues in agriculture is not only the deterioration of soil fertility in rural pastures, but also the systematic development of farmland. In General, large amounts of agricultural pasture land have been transferred to long-term leases to legal entities and individuals. They, in turn, do not conduct any type of agriculture on the leased land, but rent it out to another third party and receive rent as a source of income. This situation, in addition to social inequality, denies the inflow of investment in agricultural production. In this regard, it is necessary to make legislative changes to the conditions of development, including irrationally used agricultural land, pastures and hayfields (Mizanbekova, Uspanova, Kunanbaeva, D. (2018).

Today, the main direction of agricultural policy is the sustainable development of rural regions. As a sustainable rural development you can call them moderate socio-economic development, increase of agricultural production, full employment of the rural population, increasing their life and improving the efficiency of agricultural production, rational use of land (Yesbolova, Ibraimova, Zhadigerova, Sametova, 2014).

The state and development of agriculture in the region contributes to the sustainable development of the rural community, improving the level and quality of life of the rural population, and preserving the ecological balance in rural areas. Since the population plays an important role in the agro-industrial production system, it is necessary to solve the problems that arise for the development of their future opportunities. Therefore, it is necessary to carefully consider all the conditions that are necessary for the proper functioning of the public economy, to develop and implement mechanisms of a new Mature type.

Ensuring the sustainable development of the territory is directly related to the organization of cash flows sufficient to support the life potential and development of rural areas. In other words, this type of organization involves the simultaneous use of all sources of sustainable development. For example, by using national and regional funding, as well as using the opportunities of innovative and traditional businesses based on the internal resources of the territory (Andarova, Zhadigerova, Narkulova, 2019).

Conclusion

The main directions of increasing the profitability of production of households in rural regions are:

- creation and development of measures for storage and processing of products;
- creating conditions for selling products to manufacturers at favorable prices;
- coverage of households in the agricultural machinery market at affordable prices;
- provision of material and technical services on a leasing basis;
- cheapening and improving the quality of agricultural and veterinary services.

As a result, speaking about the main indicators of agriculture in the region, we discussed the indicators of agricultural production in the region. Based on the current situation, we have justified the importance of taking and implementing measures necessary to improve the work of the population engaged in the national economy, contributing to solving the main problems of the national economy, increasing production volumes. Thus, the self-employment of households will be stable and will increase the number of people employed in their own farms.

In conclusion, we note that the development of self-employment in households is one of the most important ways of combating unemployment in rural areas, it helps to change stereotypes about employment of the population, creates additional value orientations and motives, contributes to the overall welfare of the population and reducing social tension in society. In General, this area of active employment policy in rural areas requires more attention and support from government agencies.

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Ауыл халқын жұмыспен қамту мәселелерін шешудегі жұртшылық шаруашылығының рөлі мен дамуы

Аңдатпа

Мақсаты: Мақаланың мазмұны ауыл шаруашылығының жұртшылық шаруашылығы деп аталатын шаруашылық жүргізуші шағын нысанды санатының әлеуметтік мәселе – жұмыспен қамтуды шешуде үлес қосатындығына арналған.

Әдісі: Қазақстан Республикасы ауыл шаруашылығындағы жұртшылық шаруашылығының әрекет етуін және оның бүгінгі таңдағы ауыл шаруашылық өнімдерді өндірудегі үлес салмағы қарастырылған. Жұртшылық шаруашылықтарының әрекет ету принципіне, сандық көрсеткіштеріне, ауыл шаруашылық өнім өндірісіндегі үлес салмағы сипатталған. Ауыл халқының өзін-өзі жұмыспен қамтудағы жұртшылық шаруашылығы туралы көптеген ғалымдардың зерттеу жұмыстарын жүргізгендігі жайлы дәйектер мақала мазмұнында көрсетілген.

Қорытынды: Жұртшылық шаруашылықтары ауыл халқының жұмыспен қамтылуында өз үлес салмағына ие екендігін, ауыл шаруашылығында қалыптасқан ахуалмен түсіндірген. Алайда ауыл халқының жұмыспен қамтуды зерттеуге арналған тұтас мақсатты кешенді зерттеулердің қалыптаспағандығын алға тартқан. Сол себепті осы тақырыпты зерттеп, талдау жасаулар негізділігі келтірілген.

Тұжырымдама: Сандық мәліметтерді ұсына отырып, жұртшылық шаруашылығының ауыл шаруашылық өнім өндірісіндегі салмақты үлеске ие екендігі дәлелденді. Сол арқылы ауыл халқының жұмыспен қамтылып, өз табыстарын тауып жатқандығын байқауға болатындығын түсіндірген. Бірқатар өзекті мәселелер айтылып, шешу жолдарын табудың маңыздылығы негізделген.

Кілт сөздер: ауыл шаруашылығы, ауыл шаруашылық кәсіпорын, жұртшылық шаруашылығы, жеке қосалық шаруашылық, шаруа (ферма) қожалықтары, өзін-өзі жұмыспен қамту, жұмыспен қамтылғандар, ауыл шаруашылық кәсіпорындар, мал шаруашылығы, өсімдік шаруашылығы.

Г.Г. Шинет, Г.А. Жадигерова, А.Е. Есболова, Р.К. Андарова, Э.Е. Жусипова

**Роль и развитие хозяйств населения в решении вопросов
занятости населения сельской местности**

Аннотация

Цель: В содержании статьи рассмотрено хозяйство населения как категория сельского хозяйства, которая вносит свой вклад в решение социальной проблемы – занятости населения.

Методы: Изучены функционирование хозяйств населения в сельском хозяйстве Республики Казахстан и его удельный вес в производстве сельскохозяйственной продукции на сегодняшний день. Описаны принцип действия, количественные показатели хозяйств населения, удельный вес в производстве сельскохозяйственной продукции. В содержании статьи приведены мысли ученых о проведении многочисленных исследований по вопросам самозанятости населения сельского хозяйства.

Результаты: Отражен удельный вес хозяйств населения в занятости сельского населения по сложившейся ситуации сельской местности. Однако не сформировались целостные целевые комплексные исследования для исследования занятости сельского населения. В этой связи приведена обоснованность изучения и анализа данной темы.

Выводы: Представляя количественные данные, общественность доказала, что сельское хозяйство имеет весомую долю в производстве сельскохозяйственной продукции. Тем самым объясняется, что сельское население является самозанятым и зарабатывает в хозяйствах самостоятельно.

Ключевые слова: сельское хозяйство, агропромышленный комплекс, личное подсобное хозяйство, хозяйство населения, фермерское хозяйство, кооператив, самозанятость, самозанятые, сельскохозяйственные предприятия, скотоводство, растениеводство.

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Innovative activity of the enterprises in Kazakhstan: economic and statistical analysis

Abstract

Object: the purpose of the presented scientific article is to conduct an economic and statistical analysis of the innovative activity of the enterprises in Kazakhstan; the object is the enterprises of Kazakhstan, characterized by innovative activity, introducing and using in their activities the results of intellectual labor, represented by new technologies, technical objects, patents for inventions, utility models, industrial designs, etc.

Methods: to achieve the goal of the research, *general scientific methods* were widely used, in particular, *the method of analysis*, which made it possible to determine the entire set of parameters that characterize the innovative activity of enterprises in Kazakhstan; *a generalization method* aimed at establishing existing relationships between the considered economic objects and phenomena; *method of graphic interpretation*, which made it possible to visualize the results obtained; *economic and mathematical methods*, represented by correlation and regression analysis, methods of checking the constructed model based on the Student's, Fisher's test, the coefficient of determination and the Darbin-Watson test; *forecasting methods* based on the constructed multiple regression.

Results: within the framework of the research, the authors built a multiple regression model for the innovation activity of the enterprises in Kazakhstan, the adequacy and correctness of which was verified using the Student's t-test, Fisher's test, the coefficient of determination and the Darbin-Watson test. At the same time, using the Gauss method, the normal system of equations was solved, which made it possible to obtain a standardized regression equation, taking into account the calculated coefficients. It is also important to note that the article provides a comprehensive analysis of the development of the theory of innovation and key approaches to the interpretation of the concept of "innovative activity of an enterprise" based on the research of various scientific materials, including those widely represented in scientometric databases - Scopus, Clarivate Analytics, Google Scholar and RSCI.

Conclusions: using of correlation-regression analysis in terms of constructing multiple regression models is the optimal method that allows not only to effectively and comprehensively describe the innovative activities of the enterprises in Kazakhstan, but also to use it for the subsequent forecasting of the analyzed base indicator (dependent variable). The most important aspect remains the choice of parameters, which should be built on a deep and comprehensive understanding of the economic phenomenon under consideration, while their selection should be based on their strict economic interpretation, in particular by constructing matrices of pair correlation coefficients and taking into account multicollinearity.

Keywords: innovative activity, enterprises of Kazakhstan, inventions, industrial designs, utility models, innovative products, multiple regression, economic and mathematical modeling

Introduction

In the context of modern economic development, the transition of industrial enterprises to a qualitatively new level is identified as the main determinant - an innovative update associated with the process of innovative production, the advantage of which is the effective using of material, technical, production, intellectual and organizational and managerial resources that make up the innovative potential (Krawczyk-Sokolowska et al., 2019), the growth of which determines the further development of an industrial enterprise,

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its competitive position in the markets, as well as the production of products with high added value (Vinogradova et al., 2017).

Without the process of creating and introducing innovations that define the essence of innovation, it is impossible to resist the forces that change market conditions and activate the forces of competition.

Thus, in the context of modern competition, shortening the life cycle of goods and services, the development of new diverse technologies, the merger of enterprises into clusters, the transition of countries to the fourth industrial revolution, one of the main conditions for the formation of a competitive strategic perspective of any enterprise is increasingly becoming its innovative activity.

In the scientific literature, the concept of innovation is given special attention, a large number of scientific studies, including in the international databases Scopus, Clarivate Analytics, Google Scholar, RSCI, are devoted to the topic of managing the innovative and digital potential of an enterprise, in particular those operating in the field of industrial production.

At the same time, it should be noted that there is no generally accepted definition of the concepts of “innovative activity” and “innovative potential” as an economic category. The analysis showed that the structure of innovation potential, which is the result of innovation, has not been fully investigated. Now, there are several options for the structure of innovation potential, often contradicting each other. A similar scientific problem is also typical for determining the key components of the components of innovation for its comprehensive analysis, assessment and subsequent forecasting, including through the using of multiple regression models.

Literature Review

Innovation activity is one of the most important factors in the development of the modern world. The ability to produce and perceive all kinds of innovations in our dynamic time determines the fate of individual subjects, organizations, peoples and societies. Innovations as a tool of transformation and a form of management of production development have become the object of independent study in all industrialized countries. A whole field of science has emerged - innovation science, which solves the problems of the formation of innovations, their spread, studies the reasons for resistance to innovations, etc. In the center of innovation is the process of change, i.e. transition and transfer of the system under consideration from one state to another.

As noted above, the issues related to the research of the creation, commercialization of innovations and the characteristics of innovative activities of enterprises are relevant, but, at the same time, not fully studied from the standpoint of determining the key components of the studied economic phenomenon.

In order to understand the specifics and essence of innovation, it is necessary to turn to the concept of “innovation”.

In modern scientific literature, many definitions are given to the concept of “innovation”, various options for classifications are proposed, built on various classification features.

It is generally accepted in the scientific community that the conceptual apparatus of innovations was mainly developed abroad by such scientists as I. Perlaki, J. Schumpeter and many others (Perlaki, 1985; Schumpeter, 1982; Schumpeter et al., 2002). They consider “innovation” in terms of the object and subject of the research being conducted.

Such prominent figures as J. Mansfield, J. Rogers, R. Foster, B. Twiss, F. Nixon also played an important role in the development of the theory of innovation. For example, Nixon defines “innovation” as a set of activities, the result of which leads to the emergence of new / improved business processes or equipment (Nikson, 1990). Also interesting is the point of view of B. Twiss, who interprets “innovation” as a process in which the idea of creating an invention or some kind of innovation acquires economic meaning, potential economic efficiency (Twiss, 1992; Twiss, 1993).

A number of American and European scientists consider innovation as inventive activity, during which there is an intersection of two previously unrelated systems - the individual and innovation. This approach is undoubtedly interesting, but it is limited by the absence of a subsequent implementation initiative, that is, the very idea of commercialization.

An important point is also that many scientists, both foreign and domestic, identify the concepts of “innovation”, “novelty” and “novation”, defining the concept of “innovation” as an innovation used in the production or management of an organization, like an economic unit.

In general, the development of the theory of innovation in the historical and scientific context can be represented in the form of the Figure 1.

One of the most important aspects of innovation is the diffusion of innovations, which is understood as the process of diffusion of innovations in the business cycles of scientific and technical, production and organizational and economic activities.

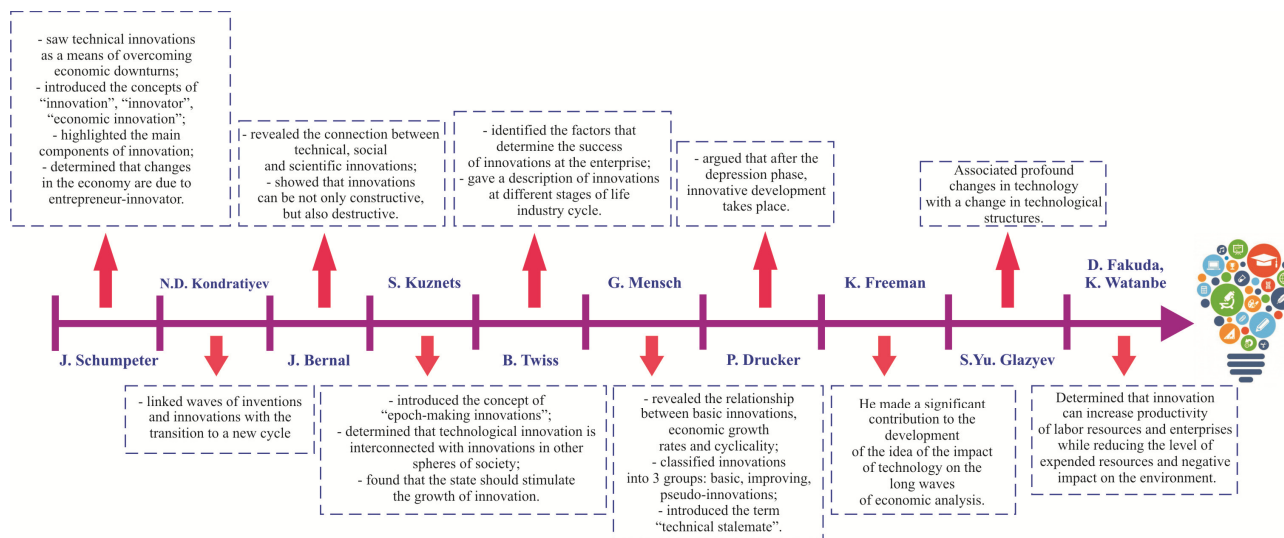


Figure 1. Development of the theory of innovation in the historical and scientific context

Note: compiled by the authors

Diffuse processes are very important, since they contribute to the inflow and outflow of capital, an increase in the number of producers and consumers, and a change in their quality characteristics.

J. Rogers believed that diffusion is a process in which innovations are transmitted through certain channels over a certain period of time among members of a social system (Rogers, 2003).

Innovation diffusion theories are diverse and span multiple disciplines.

In 1952, the Swedish geographer T. Hägerstrand examined the process of diffusion of socio-economic phenomena in rural areas, in particular, the spread of agricultural technology, and carried out its modeling using the Monte-Carlo method (Hägerstrand, 1952).

Diffusion of innovations is a space-time process. L. Suarez-Villa (Suarez-Villa, 2002) presented the conceptual framework of the process in the broadest view. Its essence lies in the fact that within the framework of macroeconomic and regional development associated with the change in the leading industries during the N.D. Kondratieff's "long waves", the emergence of innovation centers and the rate of their diffusion in the economic space play a crucial role (Kondratieff, 1984).

Thus, based on the analysis carried out, it can be concluded that innovation is the result of inventive activity, originating from a novation that is the result of scientific research; at the same time, pronounced features of commercialization characterize novation, in contrast to innovation, with subsequent economic efficiency.

In turn, the innovative activity of an enterprise can be understood as actions aimed at generating and activating an intellectual component, with the aim of creating, using and subsequently commercializing the results of intellectual work, represented by inventions, industrial designs and utility models.

The issues of innovation activity have been repeatedly considered in the works of scientists around the world, in particular, for example, from the standpoint of the effective development of innovation in small and medium-sized enterprises (Harel et al., 2019); as part of the study of issues related to the peculiarities of the using of technology by SMEs (Bagheri et al., 2019; Brigic et al., 2019; Caldas et al., 2019), marketing and product innovations (Quaye et al., 2019; Ramadani et al., 2019). A special role in publications is assigned to issues of support for innovation activities both from the state and within the framework of the public-private partnership (Goraczowska et al., 2019; Hutahayan et al., 2019; Lopes et al., 2019; Yu et al., 2020). In addition, the issues of the innovation component are also studied within the framework of classical economic science (Jakimowicz et al., 2019), as well as taking into account the definition of the role of business incubators and other participants in the analyzed economic phenomenon in building effective regional and national innovation systems (Baskaran et al., 2019; Perez-De-Lema et al., 2019; Siqueira et al., 2019; Liu et al., 2015).

It should be noted the special role of the universities in the formation of an effective innovative regional system, which is an integral component in the creation (Bellucci et al., 2016; Brochner et al., 2016; Cui et al., 2016) and the subsequent commercialization of innovative products (Dehghani et al., 2015; Kesting et al., 2016; Mamrayeva et al., 2012).

It should also be noted that a number of scientists consider innovation activity through the prism of sustainable entrepreneurship development and the role of R&D (Soltanzadeh et al., 2019; Soltysik et al., 2019; Mamrayeva et al., 2018).

In the context of the Fourth Industrial Revolution, the transition of a number of economies to a digital basis, a special role is assigned to the using of various digital tools in the structure of enterprises' innovation activities (Krykavskyy et al., 2019; Mahmood et al., 2020). In particular, a number of authors pay attention to the specifics of the using of blockchain, big data, cyber-physical systems and new-type laboratories in the process of building digital potential by companies, industrial enterprises and integrated structures (Galvin et al., 2020).

Despite of the significant contribution of these scientists, the research of the problem posed cannot be considered exhaustive. The works of the listed authors have created theoretical and methodological foundations for the formation of a system of innovative activities of enterprises and the innovative infrastructure of regions, various approaches and aspects of building a mechanism for the diffusion of innovations into production and consumption are proposed. However, the accumulated experience needs to be rethought and the development of such combinations that would correspond to the ongoing changes in the economy, the emergence and strengthening of an import substitution strategy aimed at enhancing domestic innovative developments and their introduction into the country's economy, taking into account the characteristics of the potential of the regions, their specific capabilities.

Methods

To achieve the goal set in the article and related to the economic and statistical analysis of the innovative activities of enterprises in Kazakhstan, the following methods were used:

1. *general scientific methods*, including:

- *an analysis method* that allows us to determine a complex set of indicators characterizing the innovative activity of enterprises in Kazakhstan (15), as well as to highlight the assumed dependent variable, which the selected parameters can influence (in our case - “the volume of innovative products (goods, services), billion tenge”);

- *a generalization method* aimed at establishing the existing relationships between the analyzed economic objects and phenomena, as well as allowing to determine anomalous points within the considered dependent variable;

- *the method of structuring and content analysis* will allow organizing all the information received related to the assessment of innovative activities of enterprises;

- *the method of functional and structural research of objects* will make it possible to build all possible options for the implementation of the goal and tasks related to the economic and statistical analysis of the scientific problem under consideration;

- *a method of graphic interpretation*, which contributes to the visual presentation of the results obtained using the MS Office application package and the Corel Draw graphic editor in terms of creating a picture reflecting the key stages of the development of the theory of innovation in the structure of scientific knowledge;

2. *economic-mathematical and economic-statistical methods* presented by:

- *Irwin criteria*, which allows checking the presence of anomalous points in the considered trend (in our case - according to the dependent y variable - “the volume of innovative products (goods, services), billion tenge”);

- *the method of constructing multiple regression*, including on the basis of a detailed analysis of the choice of regression coefficients based on the construction of a matrix of paired correlation coefficients, their assessment, studying the presence of multicollinearity between the values under consideration;

- *methods of checking the constructed model* based on:

- Student's t-test, taking into account the confidence level = 0,05;

- Fisher Criterion, understanding the peculiarity and number of factors of the constructed model, the number of observations included in the analysis at $\alpha = 0,05$, and also taking into account that $F_{\text{fact}} > F_{\text{table}}$, which will indicate the significance of the constructed regression equation;

- Coefficient of determination: at the same time, taking into account that to assess the adequacy of the model, R must be more than 85%;
- Durbin-Watson Statistic, taking into account the range fact $1,5 < DW < 2,5$, calculated on the basis of the obtained residuals;
 - *forecasting methods* based on the constructed multiple regression;
 - *Gaussian elimination*, which allows solving a system of equations and building a standardized form of regression equations.

It is also important to note that the sequence and stages of the research presented in this scientific article comply with the standards, algorithms generally accepted in scientific circulation and reflected, including in scientific and periodical literature.

The reliability of the data is ensured by the reliability of the calculations and measurements carried out, as well as the nature of their subsequent interpretation; the reproducibility of the data is due to the verification of the results obtained in MS Excel.

Results

The innovative activity of enterprises is a complex economic phenomenon, since today, as noted earlier in the article, there is still no consensus among scientists regarding the set of indicators that can be included in the analysis and used for subsequent research.

The presented author's approach is based, first of all, on the experience of studying the issues of innovation, certain aspects of the features of the commercialization of the results of intellectual work, as well as on conducting many years of research in the field of studying the features of the functioning of industrial enterprises and integrated structures, including those represented by innovative-active industrial clusters, constituting their innovative and digital potential, the study of which, of course, in the context of building a new type of economy, is especially relevant and significant.

Considering all of the above, the following indicators were selected for analysis:

1) *Dependent variable:*

y – the volume of innovative products (goods, services), billion tenge;

2) *Independent variables:*

x₁ – number of enterprises with innovations, units;

x₂ – number of innovative-active enterprises, units;

x₃ – the level of activity of enterprises in the field of innovation, in percent;

x₄ – costs for innovations, billion tenge;

x₅ – the number of organizations that have created and using new technologies and equipment, units;

x₆ – the number of created and used new technologies and equipment, units;

x₇ – internal costs for research and development work (R&D), billion tenge;

x₈ – number of organizations that carried out R&D, units;

x₉ – number of employees who performed R&D, thousand people;

x₁₀ – average monthly nominal wages of employees by type of economic activity “Research and Development”, thousand tenge;

x₁₁ – investments in fixed assets by type of economic activity “Research and Development”, billion tenge;

x₁₂ – granted patents for inventions, units;

x₁₃ – granted patents for utility models, units;

x₁₄ – granted patents for utility models, units;

x₁₅ – granted patents for breeding achievements, units.

All initial data are presented in table 1.

Table 1. Initial data for 2008-2019 in the context of the analyzed parameters

Year	Indicators															
	Y	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	X ₁₁	X ₁₂	X ₁₃	X ₁₄	X ₁₅
2008	111,5	11172	399	4	113,5	208	823	34,8	421	16,3	81,8	5,9	1755	110	84	1
2009	82,6	10096	447	4	61,1	140	487	39	414	15,8	90,9	3,8	1687	105	236	21
2010	142,2	10937	572	5,2	235,5	338	1037	33,5	424	17,0	103,6	5,9	1868	116	260	79
2011	235,9	10723	762	7,1	194,9	562	1365	43,4	412	18,0	121,4	8,9	1887	123	270	50
2012	379,0	21452	1622	7,6	325,6	713	1608	51,3	345	20,4	148,5	14,8	1400	126	274	67
2013	578,3	22070	1774	8	431,9	664	2374	61,8	341	23,7	153,6	11,5	1500	163	280	122
2014	580,4	24068	1940	8,1	434,6	681	2469	66,3	392	25,8	171,6	9,3	1504	165	282	97
2015	377,2	31784	2585	8,1	663	865	3704	69,3	390	24,7	184,9	11,2	1504	166	282	98
2016	445,8	31077	2879	9,3	1533,8	735	7780	66,6	383	23,0	208,8	11,5	1011	577	182	123
2017	844,7	30854	2974	9,6	907,2	704	5291	68,9	386	22,1	228,4	16,3	865	591	129	91
2018	1179,2	30501	3230	10,6	861,9	748	5957	72,2	384	22,4	240,7	7,3	778	950	219	87
2019	981,3	28414	3206	11,3	545,1	839	5831	82,3	386	21,8	255,3	11,6	730	1049	229	24

Note - compiled by the authors on the basis of statistical compilations characterizing the science and innovation activities of Kazakhstan

Graphical interpretation of the dynamics of factor Y - “the volume of innovative products (goods, services), billion tenge” to conduct a visual analysis that allows us to determine the presence or absence of abnormal points in the structure of the series under consideration (Figure 2).

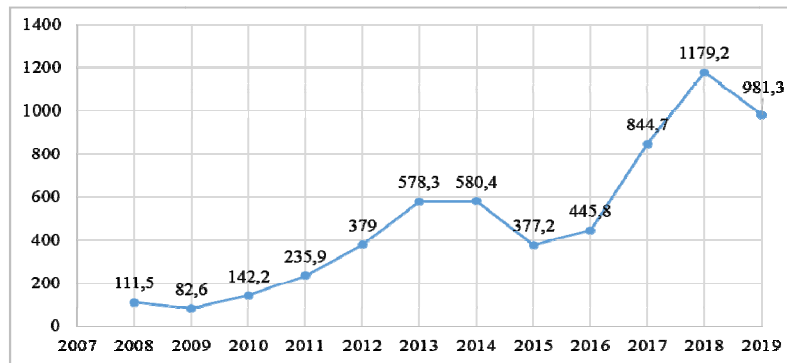


Figure 2. The volume of innovative products (goods, services) produced by enterprises of Kazakhstan for the period 2006-2019, billion tenge (graphic interpretation for visual identification of abnormal points)

Note: compiled by the authors

Visual analysis of the trend made it possible to assume that there are no abnormal points, but to confirm the hypothesis put forward, it is advisable to use the Irwin criteria. For n = 12, the threshold value of the Irwin criteria should not exceed $\lambda_{cr} = 1,3$.

In order to calculate the value of the Irwin criteria for the indicators under consideration, it is necessary to determine:

1. mean value (calculated in table 2);
2. unbiased estimate of variance (D (y) - formula 1);
3. standard deviation based on unbiased variance estimate - formula 2;
4. directly the value of Irwin criteria (using formula 3).

$$D(y) = \frac{\sum (y_i - \bar{y})^2}{n - 1} = \frac{1379639,309}{12 - 1} = 125421,755 \tag{1}$$

$$\sigma(y) = \sqrt{D(y)} = \sqrt{125421,755} = 354,149 \tag{2}$$

$$\lambda = \frac{|y_i - y_{i-1}|}{\sigma(y)} \tag{3}$$

Table 2. Calculated values of the Irwin criteria in the context of 12 considered indicators

t	y	$(y_i - y_{avr})^2$	λ
1	111,5	146950,833	-
2	82,6	169943,192	0,0816
3	142,2	124356,145	0,168
4	235,9	67050,787	0,265
5	379	13419,292	0,404
6	578,3	6965,293	0,563
7	580,4	7320,228	0,00593
8	377,2	13839,562	0,574
9	445,8	2405,085	0,194
10	844,7	122400,853	1,126
11	1179,2	468346,328	0,945
12	981,3	236641,71	0,559
Total (amount for y): 5938,1		1379639,309	
Average y value = 494,8			
Note – complied by the authors			

According to the data obtained, it can be concluded that no anomalous values are observed.

To construct a matrix of paired correlation coefficients and a matrix of interfactor correlations, the Microsoft Office software package was used (Table 3)

Table 3 – The matrix of pairwise correlation coefficients

Parameter	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15
Y	1															
X1	0,761133	1														
X2	0,868211	0,969242	1													
X3	0,900815	0,865868	0,945388	1												
X4	0,522348	0,816321	0,797942	0,6915	1											
X5	0,701276	0,872256	0,866248	0,904262	0,626187	1										
X6	0,732733	0,86587	0,915959	0,850293	0,92889	0,704445	1									
X7	0,855109	0,926603	0,957828	0,934006	0,664982	0,880349	0,820508	1								
X8	-0,43862	-0,53457	-0,48591	-0,52286	-0,31391	-0,63012	-0,29584	-0,52057	1							
X9	0,609004	0,845796	0,77108	0,734825	0,59995	0,853415	0,596143	0,84154	-0,60599	1						
X10	0,909788	0,915229	0,984493	0,971802	0,742308	0,846289	0,902744	0,951165	-0,4315	0,711543	1					
X11	0,434257	0,656037	0,612352	0,634745	0,484044	0,743481	0,468697	0,585117	-0,69844	0,582855	0,589392	1				
X12	-0,88766	-0,83057	-0,91738	-0,86795	-0,71919	-0,65334	-0,8865	-0,84542	0,414756	-0,51724	-0,93394	-0,51471	1			
X13	0,865205	0,651567	0,806373	0,814906	0,589065	0,528326	0,832079	0,74178	-0,1609	0,323615	0,86645	0,25479	-0,92092	1		
X14	-0,04368	-0,01722	-0,03574	0,099508	-0,22184	0,305308	-0,22728	0,09901	-0,3177	0,306127	-0,02845	0,007885	0,260983	-0,25497	1	
X15	0,298465	0,587657	0,488252	0,453098	0,645316	0,582157	0,452626	0,442828	-0,53151	0,737769	0,409256	0,457441	-0,23892	0,044953	0,345577	1

Note – compiled by the authors.

Table 3 shows that the analyzed Y – “the volume of innovative products (goods, services), billion tenge” is really influenced by factors, 11 of which (X1-X7, X9-X10, X12-X13) significantly exceed 50%. At the same time, it should be noted that at the initial stage of building the model, the author decided to include factors in the model, according to which the correlation coefficient, *according to the Chaddock scale*, is not lower than 0,5 (which corresponds, at least, to the presence of a noticeable connection strength).

The table also shows that there is multicollinearity between the above factors, as a result of which only 4 factors were selected for building the model: X3, X10 and X12-X13 (further in the analysis, these indicators will be designated as X1, X2, X3 and X4, respectively).

Using the add-in “Data Analysis”, we will carry out calculations to estimate the indicators of the future regression model (Tables 4-6).

Table 4. Regression statistics

Regression statistics	
Multiple R	0,922781026
R-square	0,851524822
Normalized R-square	0,752541369
Standard error	173,7047959
<i>Note – calculated by the authors.</i>	

Table 4 shows that the reduced *coefficient of determination* exceeds 85%, which indicates that the model is consistent with the data; such a model is considered viable. It is also important to note that the normalized R-square (reduced coefficient of determination) is also quite high, which also confirms the significance of the constructed regression.

Table 5. ANOVA results

Index	df	SS	MS	F	F Significance
Regression	4	1038289,172	259572,2931	8,602698755	0,011634539
Residuals	6	181040,1367	30173,35612	-	-
Total	10	1219329,309	-	-	-
<i>Note – calculated by the authors.</i>					

Next, write out the actual value of Fisher's F-criterion = 8,6 (Table 5). Taking into account the fact that we are working with a four-factor model, as well as the fact that we have 12 observations, we will use the table of the already calculated values of Fisher's F-criterion at $\alpha = 0,05$. As a result, we get: $F_{act} = 8,6 > F_{table} = 3,36$, which indicates the significance of the regression equation (thus, the relationship is proved).

Table 6. Calculated Regression Coefficients

Parameter	Coefficients	Standard error	t-statistics	P-Value	Bottom 95%	Top 95%	Bottom 95%	Top 95%
Y-intersection	67,7	1131,33418	0,059827854	0,954235687	-2700,589716	2835,96031	-2700,589716	2835,96031
4	95,0	107,7661793	0,881443293	0,411992409	-168,7045654	358,6841173	-168,7045654	358,6841173
81,8	-0,7	5,956692009	-0,124992065	0,904612512	-15,3200395	13,83096104	-15,3200395	13,83096104
1755	-0,2	0,499933536	-0,402169604	0,701494362	-1,424351366	1,022235222	-1,424351366	1,022235222
110	0,2	0,393806643	0,627125785	0,553675887	-0,716643842	1,210576441	-0,716643842	1,210576441
<i>Note – calculated by the authors.</i>								

The calculations made it possible to obtain $t_{cr} = 2,2$ (taking into account the confidence level = 0,05); in our case: $t_a > t_{cr}$ and $t_b > t_{cr}$, hence parameters a and b are significant (Table 6), while $t_c < t_{cr}$, $t_d < t_{cr}$, $t_e < t_{cr}$ means parameters c, d and e are insignificant.

The final view of the model is as follows (Formula 4):

$$y = 67,7 + 95x^1 - 0,7x^2 - 0,2x^3 + 0,2x^4 \quad (4)$$

Next, show the residuals that we received in the calculation process, and then, using formula (5), it is possible to calculate the Durbin-Watson coefficient (Table 7):

$$DW = \frac{\sum (e_i - e_{i-1})}{\sum e_i^2}, \quad (5)$$

where: $e_i = y - y(x)$

Table 7. Calculation of the Durbin-Watson Statistics

Observation	Predicted value	Residuals	Calculated values	
1	66,71227807	15,88772193	-	-
2	137,5694792	4,630520816	21,44172303	126,724577
3	302,7059158	-66,80591583	4463,03039	5103,164481
4	428,6799705	-49,67997055	2468,099474	293,2980018
5	451,9106767	126,3893233	15974,26104	31000,39623
6	447,6976484	132,7023516	17609,91411	39,85432626
7	438,0422429	-60,84224293	3701,778524	37459,51006
8	734,8602652	-289,0602652	83555,83689	52083,46567
9	781,5762357	63,12376433	3984,609623	124033,5906
10	973,561133	205,638867	42287,34363	20310,5545
11	1063,284154	-81,98415448	6721,401586	82727,00249
Final total values:			180787,7	353177,6

Note – calculated by the authors

Thus, the Durbin-Watson coefficient in our case is 1,95.

It is generally accepted that if the obtained coefficient lies in the range $1,5 < DW < 2,5$, then there is no autocorrelation. Consequently, the constructed econometric model is effective and can be used in further research.

Using the obtained regression equation, the forecast for Y for 2020-2022 will be: 2020 – 1072,13 billion tenge; 2021 – 1183,25 billion tenge; 2022 – 1281,61 billion tenge.

To calculate the standardized variables and build a standardized regression equation, we use the previously obtained pair correlation coefficients and construct a normal system of equations (Formulas 6-9):

$$0,901 = \beta_1 + 0,972\beta_2 - 0,868\beta_3 + 0,815\beta_4 \quad (6)$$

$$0,91 = 0,972\beta_1 + \beta_2 - 0,934\beta_3 + 0,866\beta_4 \quad (7)$$

$$-0,888 = -0,868\beta_1 - 0,934\beta_2 + \beta_3 - 0,921\beta_4 \quad (8)$$

$$0,865 = 0,815\beta_1 + 0,866\beta_2 - 0,921\beta_3 + \beta_4 \quad (9)$$

Solve this system of linear equations by the Gaussian elimination (Formula 10):

$$\beta_1 = 0,612; \beta_2 = -0,153; \beta_3 = -0,262; \beta_4 = 0,258 \quad (10)$$

The standardized form of the regression equation is the following (Formula 11):

$$t(y) = 0,612x^1 - 0,153x^2 - 0,262x^3 + 0,258x^4 \quad (11)$$

Discussions

Despite of the broad reflection of the scientific problems considered in this article in the publications of the scientific community, the issues of determining the component composition of innovative activity in order to form and effectively manage the innovative potential of enterprises are still controversial. At the same time, there is no clear opinion between scientists regarding the allocation of the role and place of “innovative potential”. It is important to note that very often there is an identification of concepts related to innovation and digital activity, especially industrial enterprises and clusters, which are actively moving to digital platforms and unifying various processes: from production to marketing and logistics. In our opinion, it is advisable to separate these concepts.

Future scientific research of the authors will be related to the study of the features of the functioning of backbone innovative-active industrial clusters, combining both innovative and digital components, actively meeting the realities of modern economic development and the transition to building a new type of economy in the context of the Fourth Industrial Revolution.

Conclusions

The results obtained show that the selection of factors for assessing the innovation activity of enterprises by describing using economic and statistical methods, in particular those presented, for example, by multiple regression equations, is advisable to carry out taking into account the calculated pair correlation coefficients, as well as multicollinearity, excluding those factors that do not have an effect on the dependent variable. At the same time, the most important aspect of conducting a study of this kind is to check the adequacy

of the constructed model using the coefficient of determination, Fisher Criterion, Student's t-test and the Durbin-Watson coefficient. If the model is correct, then it can be used later to predict the analyzed indicator.

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**Қазақстан кәсіпорындарының инновациялық қызметі:
экономикалық-статистикалық талдау**

Аңдатпа

Мақсаты: Ұсынылған ғылыми мақаланың мақсаты — Қазақстандағы кәсіпорындардың инновациялық қызметіне экономикалық және статистикалық талдау жүргізу; объект — бұл жаңа технологиялармен, техникалық объектілермен, пайдалы модельдерге, өнеркәсіптік үлгілерге және т.б. патенттермен ұсынылған интеллектуалды еңбек нәтижелерін енгізетін және өз қызметіне қолданатын инновациялық қызметімен сипатталатын Қазақстанның кәсіпорындары.

Әдістері: Зерттеу мақсатына қол жеткізу үшін жалпы ғылыми әдістер кеңінен қолданылды, атап айтқанда Қазақстан кәсіпорындарының инновациялық қызметін сипаттайтын параметрлердің бүкіл жиынтығын анықтауға мүмкіндік берген талдау әдісі; қаралып отырған экономикалық объектілер мен құбылыстар арасындағы қазіргі өзара байланысты белгілеуге бағытталған қорыту әдісі; алынған нәтижелерді көрнекі түрде көрсетуге мүмкіндік берген графикалық түсіндіру әдісі; корреляциялық-регрессиялық талдаумен ұсынылған экономикалық-математикалық әдістер, Стюдент, Фишердің, анықтау коэффициентінің және Дарбин-Уотсон тестінің негізінде құрылған модельді тексеру әдістері, құрылған бірнеше регрессияға негізделген болжау әдістері.

Нәтижелері: Жүргізілген зерттеу шеңберінде авторлар Қазақстан кәсіпорындарының инновациялық қызметінің көптеген регрессиясының моделін құрды, оның барабарлығы мен дұрыстығы Стюдент, Фишер

өлшем шарттарын, детерминация коэффициентін және Дарбин-Уотсон өлшем шарттарын пайдалана отырып тексерілді. Сонымен қатар, Гаусс әдісін қолдана отырып, есептелген коэффициенттерді ескере отырып, стандартталған регрессия теңдеуін алуға мүмкіндік беретін қалыпты теңдеулер жүйесі шешілді. Сондай-ақ, мақалада әртүрлі ғылыми материалдарды, соның ішінде Scopus, Clarivate Analytics, Google Scholar және РИГД ғылыми-метрикалық мәліметтер базасында кеңінен ұсынылған зерттеу негізінде инноватика теориясының дамуына және «кәсіпорынның инновациялық қызметі» ұғымын түсіндірудің негізгі тәсілдеріне жан-жақты талдау жасалғанын атап өткен жөн.

Қорытынды: Бірнеше регрессиялық модельдерді құру тұрғысынан корреляциялық-регрессиялық талдауды қолдану — бұл Қазақстандағы кәсіпорындардың инновациялық қызметін тиімді және жан-жақты сипаттап қана қоймай, талданатын базалық индикаторды (тәуелді айнымалы) кейіннен болжау үшін қолдануға мүмкіндік беретін оңтайлы әдіс. Қарастырылып отырған экономикалық құбылысты терең және жан-жақты түсінуге негізделетін параметрлерді таңдаудың маңызды аспектісі болып қалады, ал оларды таңдау олардың қатаң экономикалық интерпретациясына негізделуі керек, атап айтқанда жұптық корреляция коэффициенттерінің матрицаларын құру және мультиколлинеарлеуді ескеру.

Кілт сөздер: инновациялық қызмет, Қазақстан кәсіпорындары, өнертабыстар, өнеркәсіптік үлгілер, пайдалы модельдер, инновациялық өнімдер, көптік регрессия, экономикалық-математикалық модельдеу.

Л.В. Ташенова, А.В. Бабкин

Инновационная деятельность предприятий Казахстана: экономико-статистический анализ

Аннотация

Цель: Целью статьи является проведение экономико-статистического анализа инновационной деятельности предприятий Казахстана; в качестве объекта выступают предприятия Казахстана, характеризующиеся инновационной активностью, внедряющие и использующие в своей деятельности результаты интеллектуального труда, представленные новыми технологиями, объектами техники, патентами на изобретения, полезные модели, промышленные образцы и др.

Методы: Для достижения цели исследования широко использованы общенаучные методы, в частности, метод анализа, позволивший определить всю совокупность параметров, характеризующих инновационную деятельность предприятий Казахстана; метод обобщения, нацеленный на установление существующих взаимосвязей между рассматриваемыми экономическими объектами и явлениями; метод графической интерпретации, позволивший наглядно представить получаемые результаты; экономико-математические методы, представленные корреляционно-регрессионным анализом, методами проверки построенной модели на основе критерия Стьюдента, Фишера, коэффициента детерминации и критерия Дарбина-Уотсона; методы прогнозирования на основе построенной множественной регрессии.

Результаты: В рамках проведенного исследования авторами построена модель множественной регрессии инновационной деятельности предприятий Казахстана, адекватность и корректность которой была проверена с использованием критерия Стьюдента, Фишера, коэффициента детерминации и критерия Дарбина-Уотсона. При этом, используя метод Гаусса, была решена нормальная система уравнений, позволившая получить стандартизированное уравнение регрессии, с учетом рассчитанных коэффициентов. Важно также заметить, что в статье проведен комплексный анализ развития теории инноватики и ключевых подходов к трактовке понятия «инновационная деятельность предприятия» на основе исследования разнообразных научных материалов, в том числе широко представленных в наукометрических базах данных – Scopus, Clarivate Analytics, Google Scholar и РИНЦ.

Выводы: Использование корреляционно-регрессионного анализа в части построения моделей множественной регрессии является оптимальным методом, позволяющим не только эффективно и комплексно описывать инновационную деятельность предприятий Казахстана, но и использовать его для последующего прогнозирования анализируемого базового показателя (зависимой переменной). Важнейшим аспектом остается выбор параметров, который должен быть построен на глубоком и всестороннем понимании рассматриваемого экономического явления, тогда как их отбор должен осуществляться на основании их строгой экономической интерпретации, в частности, путем построения матриц парных коэффициентов корреляции и учета мультиколлинеарности.

Ключевые слова: инновационная деятельность, предприятия Казахстана, изобретения, промышленные образцы, полезные модели, инновационная продукция, множественная регрессия, экономико-математическое моделирование.

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Transformation of university strategies in the digitalization of the educational space

Abstract

Object: is to analyze the strategy of universities in the context of the digital economy, where the emphasis is on transforming the strategy of universities in the field of their interaction with the state and the business community in the context of digitalization.

Methods: research methodology is a set of methods, mechanisms, principles, measures to improve the efficiency of development and use of new information and communication technologies, which are a prerequisite for the further development of education and digital pedagogy, in the implementation of an effective information educational environment, which is the basis for the development of any university.

Findings: authors for such indicators as the cost of services rendered and goods sold, produced on their own by the universities of the Republic of Kazakhstan and the internal costs of R&D in the Republic of Kazakhstan, hypothesized that there is a connection between: the total costs of ICT and the cost of services provided by the universities of the Republic of Kazakhstan ; ICT expenditures and scientific R&D expenditures in the Republic of Kazakhstan.

Conclusions: based on the conducted regression analysis, the author of the article concluded that:

1) with an increase in internal R&D costs by 1% of its average level, the total costs of ICT will increase by 1.342% of their average level, with the cost of services rendered and goods sold by themselves produced by the universities of the Republic of Kazakhstan unchanged;

2) with an increase in the cost of services rendered and goods sold, produced on their own, by the universities of the Republic of Kazakhstan by 1% of their average level, the total cost of ICT will increase by 0.025% of its average level, while the volume of internal R&D costs remains unchanged.

Keywords: digitalization, business community, strategy, education system, innovation, innovativeness, competitiveness, educational process, management, quality, educational space.

Introduction

The relevance and validity of the choice of the research topic is that in recent decades the world has rapidly evolved towards a new type of economy, where the main tool is the formation of digital technologies, the potential of which is largely associated with the results of the creation and development of the information society (Veduta et al., 2017, 43). The growing role of information technology in the private and public sectors is the basis for the transition to a digital state.

What happens under the influence of the spreading digital transformation of society determines the emergence of new theoretical concepts. At the end of the 20th century, we talked about building a post-industrial society, and at the beginning of the 21st century, about the transition to a knowledge society, and now about a new industrialization and digital economy. Recognizing the importance of computerization of society and the development of digital technologies in determining long-term economic growth, the government and state bodies of Kazakhstan are actively involved in the development of this sphere as one of the main directions of state policy.

In an era of rapid technological development, digitalization and the formation of a digital culture are of particular importance for ensuring the well-being of citizens and the socio-economic stability of the state. Today, the economy and society of Kazakhstan must adapt to modern conditions. The measures taken by the government to develop digitalization in Kazakhstan formed the basis for further measures in the field of digital transformation in the education system.

The development of science and education is an important priority for socio-economic modernization, achieving competitiveness of the economy and Kazakhstan becoming one of the 30 developed countries of

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the world. The key tasks of the modern system of education, training and retraining of personnel were emphasized by the First President of the country - the Leader of the nation N.A. Nazarbayev in his annual Messages to the people of Kazakhstan "Strategy" Kazakhstan - 2050: a new political course of a successful state "(Kazakhstan's way - 2050, 2014) and "Kazakhstan's way - 2050: a common goal, common interests, common future" (Strategy 2050, 2012).

The implementation of state policy in the field of informatization of higher education on the basis of ICT is being developed at the university level. All universities have their own educational informatization programs aimed at:

- development of information and communication infrastructure of universities;
- The concept of continuous training in open distance learning;
- The concept of creating a university information and educational environment and the development of digital educational resources.

The Concepts of informatization of higher education on the basis of modern ICT, approved by the Academic Councils of universities, are specified in Education Informatization Programs and Action Plans for their implementation.

Literature Review

At present, in many countries, digitalization is a strategic development priority. The State Program "Digital Kazakhstan" noted that the new digital revolution is changing today's methods of production, supply chain and value chain (State program, 2017).

The state and the business community of the Republic of Kazakhstan are implementing a number of program initiatives, the purpose of which is to modernize the country in various directions under the conditions of Industry 4.0. One of the priority tasks is the creation of a new model of economic growth, which will strengthen the competitiveness of Kazakhstan in the world through such important tasks as the creation of a "smart" education system (smart nation) that can prepare the younger generation for life in the new digital economy: specialists, high-class analysts, specialists-generators of new ideas who can think and work creatively and critically in all areas of activity (Nurtayeva et al., 2019, 27).

The field of science is an essential part of the national heritage, a fundamental resource for the country's economic and social transformations. The scientific potential largely determines the country's place in the world community, the prospects for competition in the foreign market, and the possibilities in solving its internal problems (Yuvitsa, 2015, 247).

Modern universities have the necessary potential for education, research, innovation and cultural development. However, for effective work in this direction, universities need to cooperate with business, government and other interested parties. The process of such interaction "university - business - state" is presented in the works of G. Itskovits within the framework of the concept of the Triple Helix (Etzkowitz et al., 2007, 14). But the basis for university management should be an information-analytical system (Chinayeva, 2017, 60).

So, in higher education, for example, in the USA, organizational development grew out of the "movement for quality rooted in work to improve the quality of work, productivity and improve educational processes (Sutherland, 2018, 264).

According to Yu.N.Kulyutkina, knowledge should be systematically organized, be categorical (act as general approaches, principles and key ideas) and at the same time be specific, flexible and dynamic (quickly rebuild and change under the influence of a changing situation) (Kulyutkin et al., 2002, 44).

The founder of the classical school of management, Henri Fayolle, believed that the knowledge gained during management training in educational institutions does not meet the requirements that are so necessary in effective business management (Fayol, 2012, 8).

Vakhstein V.S. in his scientific publications notes that higher education is often considered by employers as a necessary initial stage for mastering the profession. The need for lifelong learning at the mass level is becoming one of the priorities of the educational policy of OECD countries (Vakhshayn et al., 2014, 33).

In this regard, a serious problem for the state is the need for full integration into the emerging global sphere of education, taking into account national interests, characteristics and traditions of the development of educational systems.

Methods

The research methodology is a complex of methods, mechanisms, principles, measures to improve the efficiency of development and use of new information and communication technologies, which are a prereq-

uisite for the further development of education and digital pedagogy, in the implementation of an effective information educational environment, which is the basis for the development of any university.

The study was carried out using general methods used in economic science, based on a logical description of the components and functions of digital technologies in education, reflecting their essential properties using a systematic approach, providing the necessary depth of study of the scientific problem. The sources of the study were theoretical and analytical articles, works of Kazakhstani and foreign authors, which consider the issues of digitalization of the economy.

When writing the article, the authors used general scientific methods of cognition:

- statistical, normative analysis, synthesis, analogy, generalization,
- empirical-theoretical (collection, study and comparison of data),
- methods of scientific knowledge (historical-legal, formal-logical, systemic, comparative-legal).

When processing and organizing data, the methods of grouping and classification, as well as methods of mathematical modeling, were used. To build an econometric model based on the estimation of the parameters of the two-factor regression equation, an analysis was carried out using the least squares method. One of the indicators that can be used to assess the degree of response of one variable to a change in another is the coefficient of elasticity. In our case, it makes it possible to show the ability of the total costs of ICT to change depending on the change in internal costs for R&D and the cost of services rendered and goods sold, produced on their own, by universities of Kazakhstan.

The conclusions and results of the study were presented using a graphical method of presenting the results obtained. The methods used for the study of economic phenomena and processing of primary information in their totality made it possible to ensure the reliability of the analysis and the validity of the conclusions.

The information base of the research was made up of legislative and other normative acts of the Republic of Kazakhstan, statistical data of the Agency of the Republic of Kazakhstan on Statistics, analytical materials, materials of scientific economic literature and periodicals, materials of scientific and practical conferences, data of electronic resources.

Results

The state cannot ignore the development of higher education and considers the system of higher education as a priority object of public administration, thereby harmonizing the interests of the population and the economy of the state as a whole and adopting laws and other regulations in the field of educational activities of the state related to its various directions (Mamedov, 2011, 29).

You can consider the various strategic planning tools necessary for scientific support. If we consider this from the point of view of providing quality higher education, we can consider the process of implementing an interactive tool for compiling a digital curriculum, which was developed at the University of Utrecht. The tool was designed to help academic developers and supervisors in a practical discussion of the aforementioned problems and to facilitate the processes of improving the coordination of curricula and the visibility of learning paths for teachers and students. An online mapping tool offers a smart but comprehensive overview of the learning path in the curriculum (Wijngaards-de Meijer et al., 2018, 219).

The lack of empirical research in the field of scientific support, as well as the theoretical contribution that helps us better understand the role and importance of this study by conducting research and sharing not only success stories, but also failure reports (Bolander et al., 2020, 1).

Thus, we can conclude that the role of higher education and its “contribution” to the country's economy is the primary lever of economic growth.

The traditional education system as a whole is based on standard teaching methods, while the education system should be focused on how students can apply their knowledge to overcome barriers and develop their own careers. Following the innovative development path and based on the improvement of training processes using the technological infrastructure, it is possible to prepare future specialists with developed tactical and creative thinking.

Higher and postgraduate education in Kazakhstan is growing rapidly, so in the ranking of the best universities in the world Quacquarelli Symonds World University Rankings in 2017, 8 Kazakhstani universities were noted.

The results of the ranking of humanitarian and economic universities in 2020, according to the NAOKO version, indicate that among the 7 universities of Kazakhstan, the highest expert rating was given to universi-

ties with leadership in student learning outcomes, the quality of faculty, the development of science and innovation in the digital economy (Table 1) (National rating, 2020).

Table 1. The results of the ranking of humanitarian and economic universities in 2020, according to the NAOKO

№	Universityname	University Academic Activities and Employment Results	Expertreview	Employer Reputation	Student Assessment	Graduate Assessment	Final Assessment
1	KIMEP University	80,00	5,00	5,00	4,92	5,00	99,92
2	Karaganda Economic University of Kazpotrebsoyuz	77,58	4,48	3,79	4,37	3,91	94,13
3	Almaty Management University	64,50	4,07	3,54	5,00	4,53	81,64
4	Kazakh-AmericanFreeUniversity	55,84	3,56	2,88	4,57	3,88	70,73
5	Kazakh University of Economics, Finance and International Trade	56,41	4,01	3,09	4,16	2,89	70,56
6	Academy "Bolashak" (Karaganda)	52,05	4,33	2,96	4,79	4,30	68,43
7	University "Turan-Astana"	52,68	3,89	2,84	4,14	3,94	67,49

Note - Compiled on the basis of the source: National rating of the best universities in Kazakhstan 2020 // Kazakhstanskaya Pravda - No. 103 dated May 29, 2020

The results of studies evaluating the readiness of higher education for the digital economy showed that only certain universities confidently passed the stages of automation, computerization and the transition to the digital economy. Most universities are in the early stages of computerization, which implies the creation of a university IT infrastructure and the computerization of educational and administrative processes. Therefore, in order to fully participate in the formation of the digital economy through training, as well as as a branch of the digital economy, it is necessary to take steps to support universities in the field of computerization.

Digital transformation allows universities to achieve a full range of unique competitive advantages and become more sustainable as they begin to develop in accordance with a new focus based on new consumer experience and new working methods.

In modern conditions, digitalization and transformation of the development strategy of higher education can become one of the active components, where the level of higher and postgraduate education is an important part of the country's integral education system (Figure 1) (Data of the Ministry of National Economy, 2018).

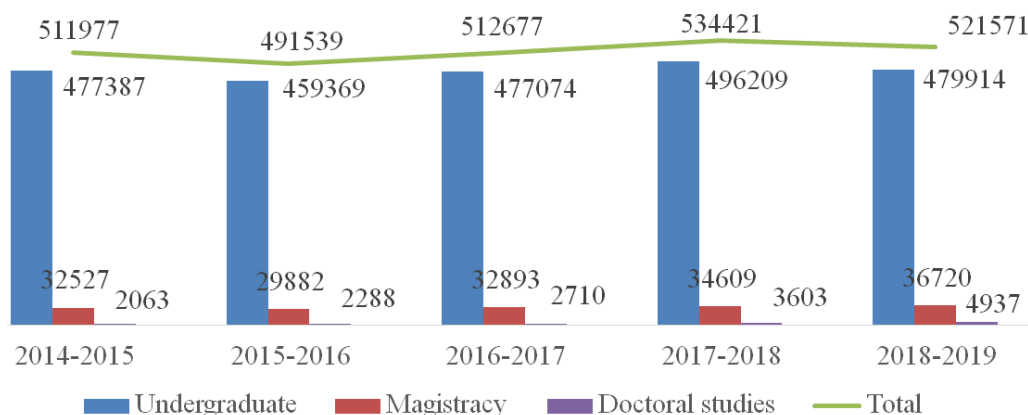


Figure 1. The contingent of universities in Kazakhstan in accordance with the three-level system of education for the period from the 2014-2019 academic years, people

Note - Compiled on the basis of the source: Electronic resource: Data of the Ministry of National Economy of the Republic of Kazakhstan for 2014-2018. //https://economy.gov.kz

The continuity of the educational process (three-tier system) to ensure continuity of levels is one of the main principles of state policy in the field of education in Kazakhstan.

In his article, T. Eagleton notes that: “Scientific merit depends on how much money you are able to earn, while a good education is equated with employment” (Eagleton, 2010).

As Shamova TI notes, the education system is designed to carry out its transformative functions. All the links in the education system are in interaction and interconnected with each other. This objectively contributes to the integrity of the system, its unity (Shamova et al., 2002, 320).

According to Talis-2018 studies in the field of a three-level training system, the degree of Kazakhstan teachers and directors in comparison with the OECD (master's and doctoral programs) has the following indicators (Figure 2) (Syzdykbaeva, 2019).

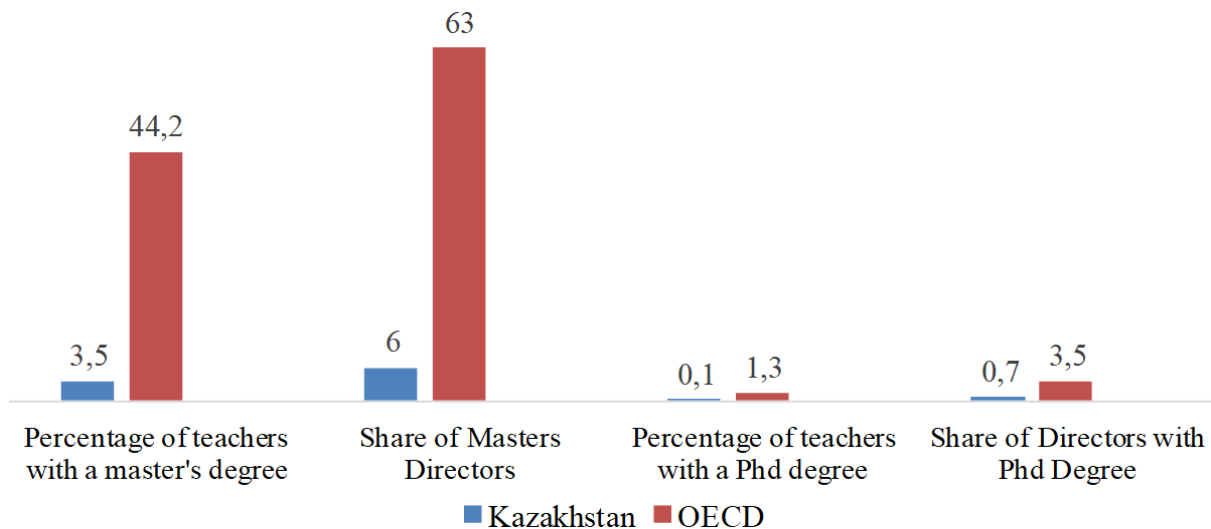


Figure 2. Comparative analysis of the degree of teachers and directors of Kazakhstan and the OECD in the field of education in 2018, %

Note - Compiled on the basis of the source: Syzdykbaeva R. “International study of teaching and learning TALIS-2018, National report, 1 volume / MES of the Republic of Kazakhstan, JSC“ Information and Analytical Center”, Nur-Sultan: 2019. - 155 p.

Currently, the Republic of Kazakhstan has an integrated national system for assessing the quality of education at several levels, which is a comprehensive system of state control and an independent assessment of the quality of education. Incentive mechanisms were created and legislated to support the accreditation of universities (Figure 3) (Analytical report, 2018).

For example, out of 110 universities that passed institutional accreditation in agencies in 2018 included in the Register of 1, 10 national, 32 state, 18 corporatized, 1 international and 49 private universities.

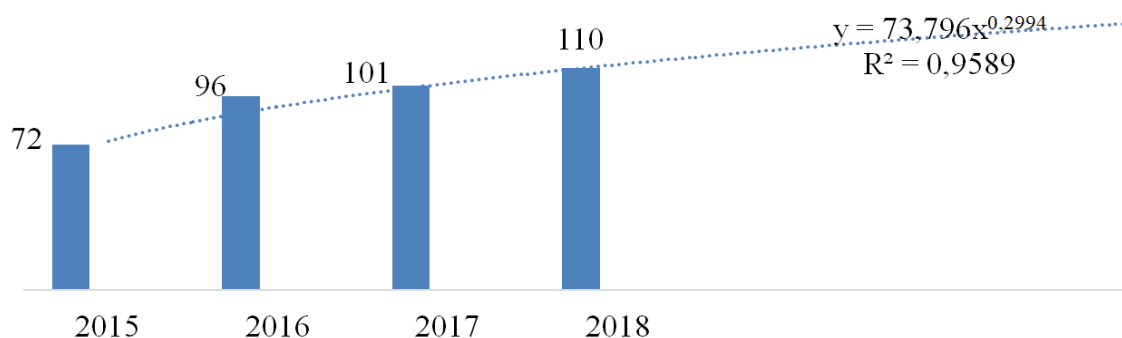


Figure 3. Dynamics of the number of universities for the period from 2015-2018, passed institutional accreditation, units

Note - Compiled on the basis of the source: Analytical report. Implementation of the principles of the Bologna process in the Republic of Kazakhstan - Astana: Center for the Bologna process and academic mobility of the Ministry of Education and Science of the Republic of Kazakhstan, 2018 - p.64

Digitalization in higher education is a complex process of transformation and a significant increase in the effectiveness of teaching, research, extracurricular and educational activities, monitoring and measuring learning outcomes, organizational and managerial activities, which is based on the widespread use of digital technologies and resources, the basis for digitalization of universities is a digital infrastructure, which should include:

- broadband internet;
- network and server equipment;
- a park of computer equipment and peripheral equipment;
- employees with relevant professional competencies;
- Digital services and resources necessary in building effective cooperation and interaction between the university, business and regional authorities.

In modern conditions, e-learning and online education services are becoming a necessary element in the development of the digital economy under the influence of factors such as:

- technological, providing new tools and technologies for training in a modern electronic environment (Komleva, 2017, 29);
- social, including the needs of society in a new quality of educational services aimed at expanding both access to education and individual needs (Mayorova, 2014, 9-14);
- economic, i.e. education has always made an important contribution to the achievement of economic indicators (Panyukova et al., 2014, 183).

According to forecasts based on OECD research, in the next 10 years, Kazakhstan will have to renew approximately 1/4 of the teaching staff taking into account the increase in the level of training in digitalization (Figure 4) (Syzdykbayeva, 2019).

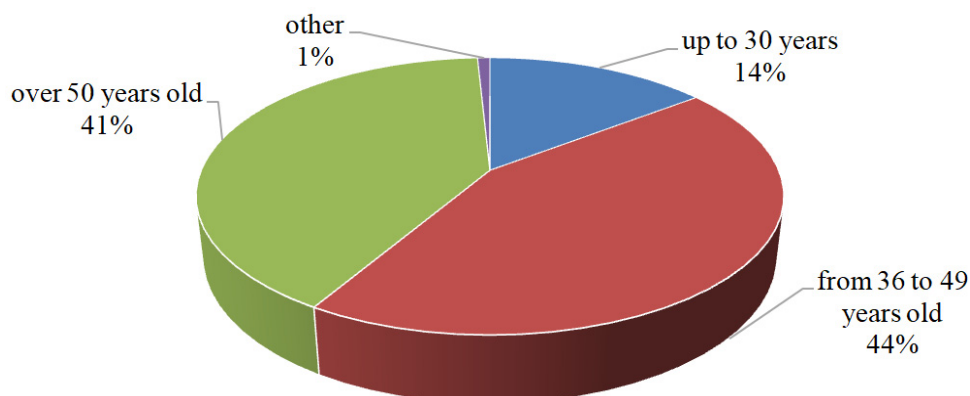


Figure 4. Forecast indicators of increasing the level of training in Kazakhstan in the context of digitalization,%

Note - Compiled on the basis of the source: Syzdykbaeva R. "International study of teaching and learning TALIS-2018, National report, 1 volume / MES of the Republic of Kazakhstan, JSC "Information and Analytical Center", Nur-Sultan: 2019. - 155 p.

In order to increase the competitiveness, efficiency and sustainable development of higher education institutions as centers of innovative technologies and practices based on the creation of modern infrastructure and the formation of a scientific, theoretical and practical base in the methodology of the integrated use of digital systems in all types of educational activities, it is necessary to involve regional authorities to optimize innovation and business activity in order to strengthen Kazakhstani universities as a driving force for Kazakhstan's integration.

The connecting link between the university and business is innovation, which enables the university to integrate with industry, as well as the university's participation in regional integration processes (Figure 5).

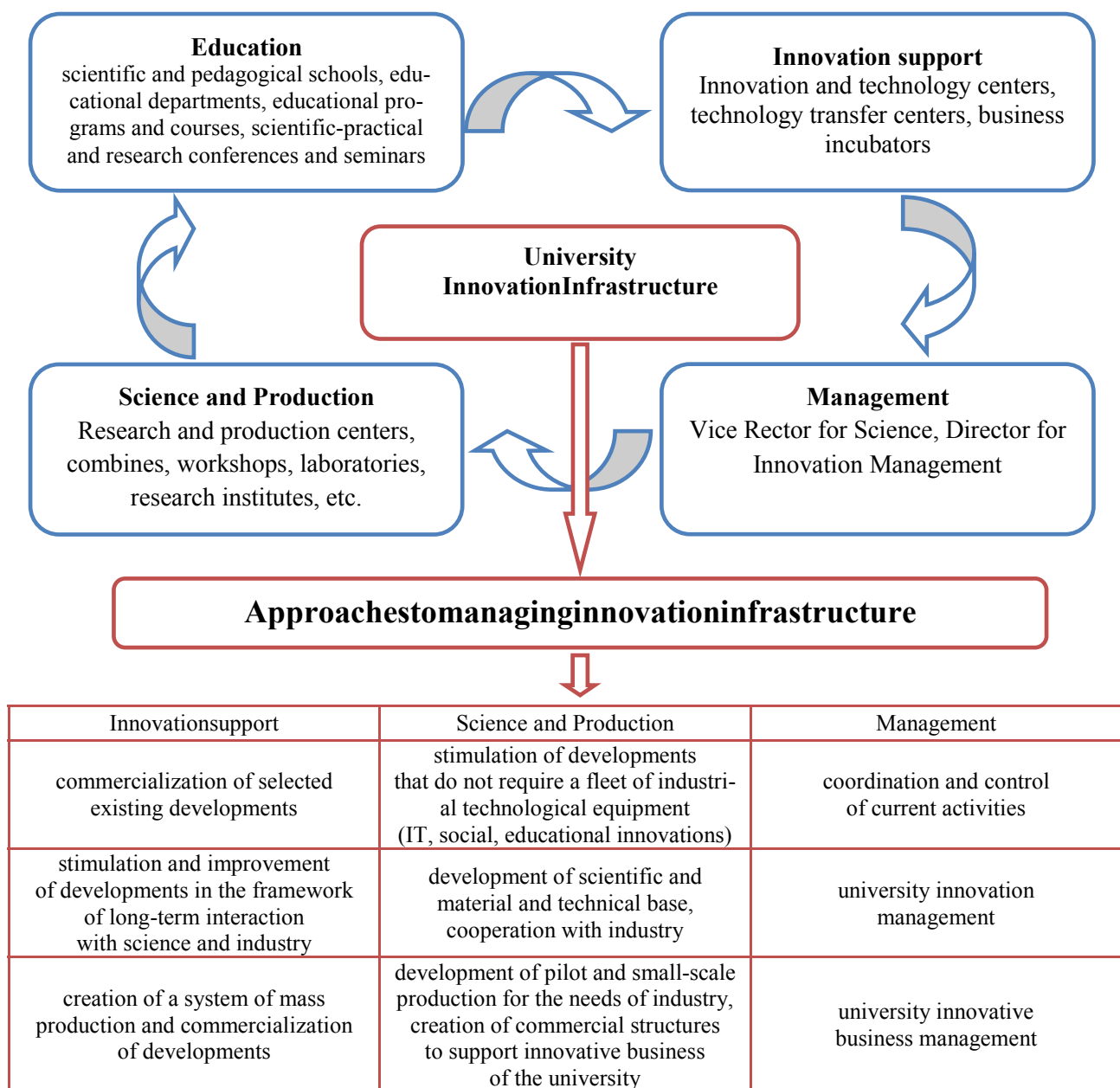


Figure 5. Features of the organization and implementation of innovative activities of the university

Note - Compiled by the author

I would like to note the fact that a distinctive feature of financing research and development in leading foreign countries is that it is implemented to a large extent at the expense of the private sector (Gulbrandsen et al., 2015, 343).

The creation of an innovation ecosystem is the creation of conditions for the development of technological entrepreneurship and innovation with stable horizontal links between business, academia and the state, where the state will act as a catalyst for an ecosystem that is able to generate, adapt and introduce innovations in production.

Today, the need of commercial organizations for qualified university staff is becoming a factor that allows universities not only to significantly increase the budget, but also to implement projects that were previously unavailable due to lack of resources.

A number of elements of the innovation ecosystem have already been created in Kazakhstan, the FEZ "PIT Alatau", AEO "Nazarbayev University" are functioning, and the international technology park Astana hub has been launched. 3/4 of the adult population of the country has a basic level of digital literacy, more than 3/4 have Internet access. One of the steps to creating the conditions for the transition to the information

society was the state program “Information Kazakhstan 2020”, which contributed to the development of the following factors:

- transition to the information society;
- improving public administration;
- the creation of institutions of "open and mobile government";
- increase the availability of information infrastructure not only for corporate structures, but also for citizens of the country.

The basis of the ecosystem that will be created through digital transformation will be the digitalization of basic sectors of the economy, the development of a mobile state, the formation of a creative society and the creation of a new infrastructure.

For the development of a creative society, a large role will be played by the education system across the entire vertical, including the school level. In this regard, in the framework of the program “Modernization of Public Consciousness”, the government needs not only to study the most progressive world experience in transforming the education system, but also to prepare an appropriate solution taking into account the specifics of our country. ”

Continuing its transition from control to management strategy, the state can also stimulate the development of a culture of productivity in the education system (Figure 6) (Data of Information and Analytical Center, 2017).

It is obvious that academic and financial autonomy concerns those areas where Kazakhstan is experiencing the greatest difficulties. The reason for providing greater autonomy to educational institutions in the context of digitalization is to improve the response of higher education institutions to the needs of the country and society. This should lead to the development of more innovative potential and increased efficiency.

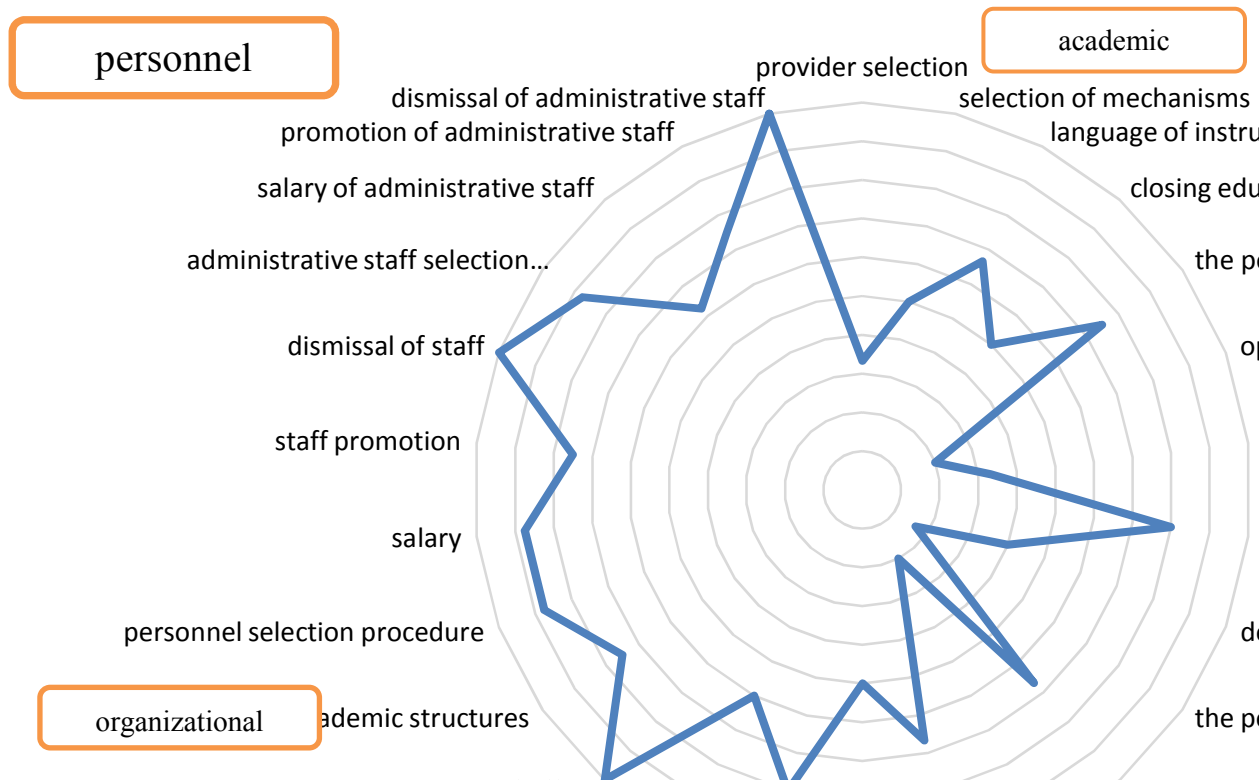


Figure 6. General assessment of the autonomy of state higher education institutions of Kazakhstan

Note - Compiled on the basis of the source: Data of Information and Analytical Center JSC, Ministry of Education and Science of the Republic of Kazakhstan - Astana, 2017.

At the same time, I would like to note that financing of higher education remains critically important in the context of digitalization and innovation policy of the state, as evidenced by the following data (Figure 7).

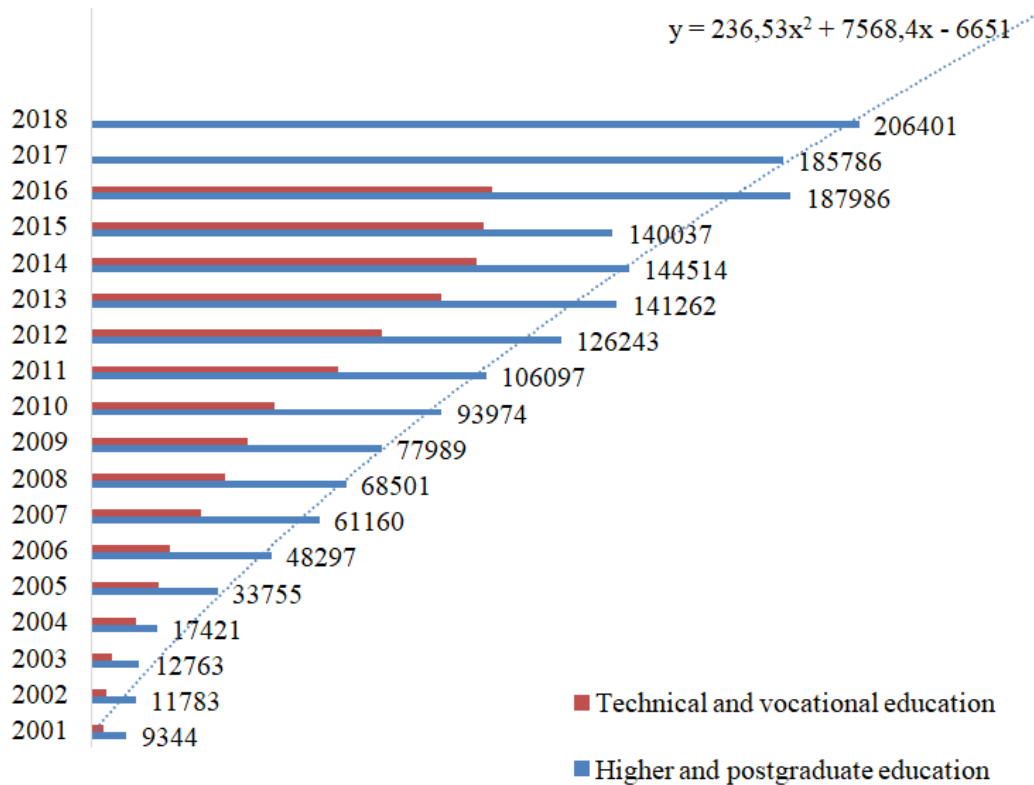


Figure 7. Public spending on education in Kazakhstan for the period from 2001-2018, million tenge

Note - Compiled on the basis of the source: Electronic resource: Data of the Ministry of National Economy of the Republic of Kazakhstan for 2001-2018. // <https://economy.gov.kz>

An analysis was carried out of the impact on the total costs of information and communication technologies in the Republic of Kazakhstan of factors such as the cost of services rendered and goods sold, produced on their own by the universities of the Republic of Kazakhstan and internal R&D costs.

To build an econometric model, the statistical data of these indicators for the period from 2013 to 2018 were used (Figure 8).

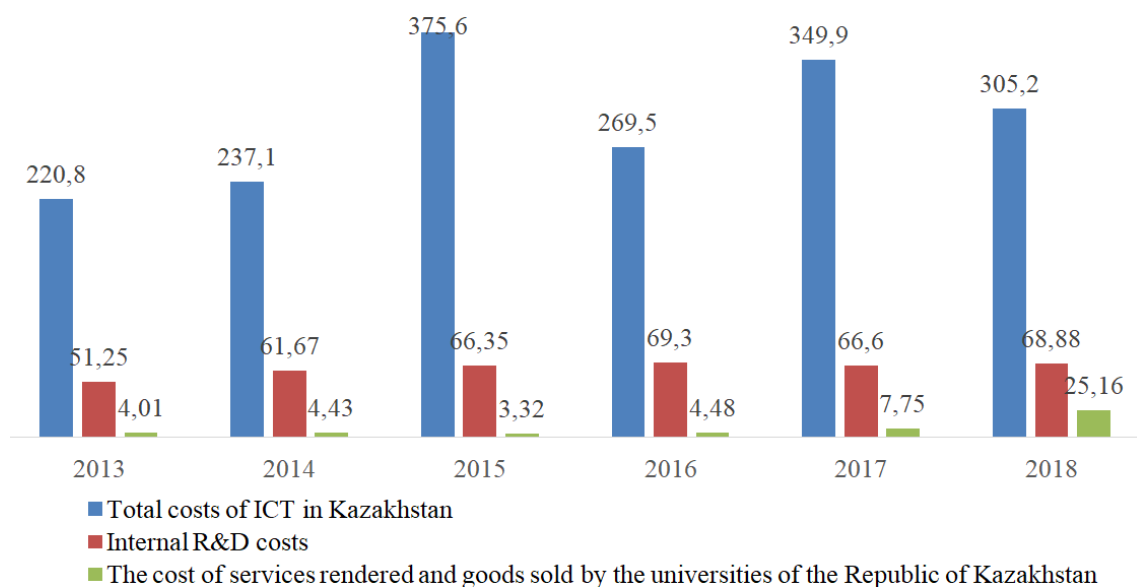


Figure 8 - Dynamics of total costs for ICT, internal costs for R&D and the cost of services rendered and goods sold on their own by universities of the Republic of Kazakhstan for the period 2013-2018, billion tenge

Note - Compiled by the author based on the source: Electronic resource: Data of the Ministry of National Economy of the Republic of Kazakhstan for 2013-2018. // <https://economy.gov.kz>

The results of the regression analysis carried out using the least squares method are shown in Table 2.

Table 2 - The results of evaluating the equation of total costs for information and communication technologies in the Republic of Kazakhstan

R	0,761
R^2	0,578
The observed value of the Fisher test	5,613
Fisher's criterion critical	5,462($\alpha = 0,1, k_1 = 2, k_2 = 3$)
Variables	
Total costs of ICT in the Republic of Kazakhstan (billion tenge) - dependent variable	
Constant	-93,027*
Regression coefficients	
Internal R&D costs	6,143*
The cost of services rendered and goods sold, produced on their own, by universities of the Republic of Kazakhstan	0,878*
* $p < 0,1$; ** $p < 0,05$; *** $p < 0,01$	
Note - Compiled by the author	

The multiple correlation coefficient indicates the average relationship of the resulting trait with two factorial traits simultaneously, and the determination coefficient indicates that 57.8% of the variation in the dependent variable is explained by the resulting regression. The resulting regression equation as a whole and its individual parameters are statistically significant and reliable with a 90% probability.

Analysis of the parameters of the multiple linear regression equation allows us to draw the following conclusions:

1) with an increase in internal expenditures on R&D by 1 billion tenge, the total expenditures on ICT increase by an average of 6.143 billion tenge;

2) with an increase in the cost of services rendered and goods sold, produced on their own, by the universities of the Republic of Kazakhstan by 1 billion tenge, the total cost of ICT increases by an average of 0.878 billion tenge.

One of the indicators that can be used to assess the degree of response of one variable to a change in another is the coefficient of elasticity. In our case, it will show the ability of the total costs of ICT to change depending on changes in internal costs for R&D and the cost of services rendered and goods sold, produced on their own, by universities of the Republic of Kazakhstan.

The following values of the aggregate average elasticity coefficients were obtained:

$$\bar{E}_1 = 1,342\%, \quad \bar{E}_2 = 0,025\%.$$

Having analyzed these coefficients of elasticity, we get that:

1) with an increase in internal costs for R&D by 1% of its average level, the total costs of ICT will increase by 1.342% of their average level, with the cost of services rendered and goods sold, produced on their own, by the universities of the Republic of Kazakhstan unchanged;

2) with an increase in the cost of services rendered and goods sold, produced on their own, by the universities of the Republic of Kazakhstan by 1% of their average level, the total costs of ICT will increase by 0.025% of their average level, with the volume of internal R&D costs unchanged.

As a result of the analysis, the author concluded that the use of new information and communication technologies is a necessary condition for the further development of education and digital pedagogy, since the implementation of an effective information educational environment is the basis for the development of any university.

The introduction of digitalization technologies that allow the university, government, business and society to effectively interact is becoming an increasingly large-scale and dynamic process, since the digitalization process makes it possible to improve solutions and business processes for more efficient work and optimize resources with even greater benefit.

Technological modification enhances the process of differentiation and specialization in higher education, as digitalization of higher education changes the qualification requirements for the teaching staff and the rest of the university staff, through the integration of digital methods in education.

Thus, the processes of globalization and technological modernization in the digital economy contribute to the emergence of new areas of knowledge, as well as the obsolescence or practical uselessness of existing areas. In such conditions, universities should offer new forms of education aimed at a qualitatively new level of training of Kazakhstani specialists, adapted to the global competition for knowledge.

Discussion

The article discusses the strategies of universities in the context of digitalization of education and the interaction of universities, government bodies and business, the efforts of which lead to the creation of a new society in which human capital is actively developing - the knowledge and skills of the future are raised from an early age, increasing business efficiency and speed through automation and other new technologies.

To achieve this goal, the study was based on such methods of assessing the readiness of education in Kazakhstan in the context of digitalization, such as:

- The use of information technology in the educational process;
- training of teaching staff in the field of the use of information technology in education;
- computerization of education management;
- information infrastructure of higher education;
- Legal and administrative support for the digitalization of education.

Based on the conducted regression analysis, the author of the article put forward hypotheses about the existence of a relationship between the total costs of ICT and the cost of services provided by the universities of the Republic of Kazakhstan and the costs of ICT and scientific costs of R&D in the Republic of Kazakhstan, as a result of which, it was concluded that the use of new information -communication technology is a prerequisite for the further development of education and digital pedagogy, since the implementation of an effective information educational environment is the basis for the development of any university.

Conclusion

An analysis of the participation of universities, the role of the state and the business community in the digitalization of the educational space showed that there are certain benefits, that is, the effect of digitalization:

1) Economic:

- contribution to GDP, economic growth;
- reduction of unemployment, increase in the number of qualified personnel;
- the growth of labor productivity indicators;
- development of small and medium-sized businesses;
- link integration
- Transformation of the industry.

2) Social benefits:

- reduction of poverty;
- accessibility of information and communication services;
- availability of financial services;
- the availability of education, medical care.

Based on the foregoing, it can be concluded that digitalization in the system of transforming the educational space is relevant today for the development of any country, which can lead to the emergence of smart cities, transport and agriculture, the absence of digital inequality in certain regions and an increase in the level of digital literacy of the population. Therefore, as priority areas of modernization of the higher education system in Kazakhstan, in accordance with the State Program for the Development of Education and Science of the Republic of Kazakhstan for 2020-2025, we can distinguish:

- introduction of programs of professional competency-based approach in higher education taking into account social order in the framework of creating an innovative educational system of an international type;
- ensuring real multi-level higher education, the creation of modern university complexes;
- transition to a qualitatively new model of education (optimization of teaching methods, the active use of open education technologies;
- deepening integration and interdisciplinary programs at the higher school, combining them with breakthrough high technologies, practical orientation of the educational process at the university);
- An individual approach to the organization of the learning process, taking into account the personal capabilities and needs of the student in the framework of the conditions determined by the university;
- openness and rationality of the organizational structure of the university;

- increasing the competitiveness of educational institutions in the educational services market (for this purpose, the university will develop an effective image policy and marketing strategies for its implementation);
- improvement of university management on the principles of openness and democratization and the formation of a high corporate culture;
- further internationalization of education at the university through the processes of academic mobility of students and teachers, internationalization of student contingent and innovative pedagogical experience;
- raising the status of university science as part of the expansion of the commercialization of scientific achievements, the integration of university science, the business environment and production (On approval of the State Program, 2019).

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Р.Б. Жашкенова, Е.Б. Аймагамбетов, Т.П. Притворова, А.Т. Омарова, Г.Е. Накипова

Университеттер стратегияларын білім беру кеңістігін сандықтандыру жағдайында трансформациялау

Аңдатпа

Мақсаты: Сандықтандыру аясында университеттердің мемлекет және бизнес-қоғамдастықпен өзара әрекеттесу саласындағы стратегияларын трансформациялауға арналған сандық экономика жағдайындағы университеттер стратегиясын талдау.

Әдістер: Зерттеу әдістемесін кез келген университеттің дамуына негіз болатын тиімді ақпараттық білім беру ортасын іске асыруда білім беру мен цифрлық педагогиканы одан әрі дамытудың алғышарты болып табылатын жаңа ақпараттық-коммуникациялық технологияларды дамыту мен пайдаланудың тиімділігін арттыруға арналған әдістердің, механизмдердің, принциптердің, шаралардың жиынтығы құрайды.

Нәтижелері: ҚР ЖОО-ларының өздері өндірген қызметтері мен сатылған тауарларының өзіндік құны және Қазақстан Республикасындағы ҒЗТҚЖ-ның ішкі шығындары сияқты көрсеткіштер үшін авторлар мыналар арасында байланыс бар деп жорамалдады: АКТ жалпы шығындары мен Қазақстан Республикасының жоғары оқу орындары ұсынатын қызметтердің құны; АКТ бойынша шығындар және Қазақстан Республикасындағы ҒЗТҚЖ-ға ғылыми шығындары.

Қорытынды: Жасалған регрессиялық талдау негізінде мақала авторлары мынадай қорытынды жасады:

1) ҒЗТҚЖ-ға жұмсалатын ішкі шығыстардың орташа деңгейінің 1% -ға өсуімен АКТ-ға жалпы шығыстар олардың орташа деңгейінің 1,342% өседі, бұл ретте Қазақстан Республикасының жоғары оқу орындары өндіретін қызметтер мен сатылатын тауарлардың құны өзгермейді;

2) Қазақстан Республикасының жоғары оқу орындары ұсынатын қызметтер мен сатылған тауарлардың өзіндік құны өндірілген өнімнің өзіндік деңгейінің орташа деңгейінің 1% -ға өсуімен АКТ-ның жалпы шығындары олардың орташа деңгейінің 0,025% -на өседі, ал ішкі ғылыми-зерттеу шығындарының көлемі өзгеріссіз қалады.

Кілт сөздер: сандықтандыру, бизнес-қауымдастық, стратегия, білім беру жүйесі, инновация, инновациялық, бәсекеге қабілеттілік, білім беру үрдісі, басқару, сапа, білім беру кеңістігі.

Р.Б. Жашкенова, Е.Б. Аймагамбетов, Т.П. Притворова, А.Т. Омарова, Г.Е. Накипова

Трансформация стратегии университетов в условиях цифровизации образовательного пространства

Аннотация

Цель: Цель заключается в анализе стратегии университетов в контексте цифровой экономики, где акцент делается на трансформацию стратегии вузов в области взаимодействия их с государством и бизнес-сообществом в условиях цифровизации.

Методы: Методологию исследования составляет комплекс методов, механизмов, принципов, мероприятий по повышению эффективности развития и использования новых информационно-коммуникационных технологий, которые являются необходимым условием для дальнейшего развития образования и цифровой педагогики, в реализации эффективной информационной образовательной среды, являющейся основой развития любого вуза.

Результаты: Авторами для таких показателей, как стоимость оказанных услуг и реализованных товаров, произведенных своими силами вузами РК, и внутренними затратами на НИОКР в РК, были выдвинуты гипотезы о наличии связи между общими расходами на ИКТ и стоимостью услуг, которые оказывают вузы РК; расходами на ИКТ и научными затратами на НИОКР в РК.

Выводы: На основе проведенного регрессионного анализа авторами статьи были сделаны выводы:

1) при увеличении внутренних затрат на НИОКР на 1% от своего среднего уровня общие затраты на ИКТ увеличатся на 1,342 % от своего среднего уровня при неизменной стоимости оказанных услуг и реализованных товаров, произведенных своими силами вузами РК;

2) при росте стоимости оказанных услуг и реализованных товаров, произведенных своими силами вузами РК на 1 % от своего среднего уровня, общие затраты на ИКТ увеличатся на 0,025 % от своего среднего уровня при неизменном объеме внутренних затрат на НИОКР.

Ключевые слова: цифровизация, бизнес-сообщество, стратегия, система образования, инновация, инновационность, конкурентоспособность, образовательный процесс, управление, качество, образовательное пространство.

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