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CONTENTS

МАЗМҰНЫ

СОДЕРЖАНИЕ

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Human resource management in e-commerce in the Republic of Kazakhstan

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Abstract

The purpose of this article is to provide a comprehensive analysis of human resource management in the field of e-commerce in Kazakhstan. The main importance of this research is to offer innovative ideas and expand knowledge in this field, which is actively developing in the digital economy. By considering current trends, problems, and possible solutions, research becomes a valuable resource for both the academic community and industry professionals and leaders. A review of the literature of domestic and foreign authors on e-commerce and personnel management is presented. The features and directions of human resource development are studied, taking into account the requirements of the digital environment and the need to adapt digital solutions to various areas of professional practice. Examples of successful human resource management are given and recommendations are given to address these issues. As a result of the analysis, recommendations have been identified that are proposed to be used for human resource management in the context of e-commerce in Kazakhstan. The article is based on secondary data. A bibliometric analysis was conducted to study the most frequently used keywords in the SCOPUS database on the research topic, in order to identify trends and analyze recent research in the field of e-commerce and human resource management. The scientific works of the authors from the sources Web of Science, ResearchGate and Google Scholar were analyzed.

Keywords: e-commerce, marketplace, human resources, online shopping, marketplaces, online platforms, e-commerce channels, online shoppers, staff

Қазақстан Республикасындағы электрондық коммерциядағы адам ресурстарын басқару

Құлман А.Б.[1]*

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Түйін

Мақаланың мақсаты Қазақстандағы электрондық коммерция саласындағы адам ресурстарын басқарудың жан-жақты талдауын ұсыну болып табылады. Зерттеудің негізгі мәні цифрлық экономика жағдайында белсенді дамып келе жатқан осы саладағы инновациялық идеяларды ұсыну және білімді кеңейту. Ағымдағы тенденцияларды, мәселелерді және ықтимал шешімдерді қарастыра отырып, зерттеу академиялық қауымдастық үшін де, кәсіпқойлар мен сала жетекшілері үшін де құнды ресурсқа айналады. Электрондық коммерция және персоналды басқару мәселелері бойынша отандық және шетелдік авторлардың әдебиеттеріне шолу жасалды. Цифрлық ортаның талаптарын және цифрлық шешімдерді кәсіптік практиканың әртүрлі салаларына бейімдеу қажеттілігін ескере отырып, адам ресурстарын дамытудың ерекшеліктері мен бағыттары зерттелді. Адам ресурстарын сәтті басқарудың мысалдары келтірілді және осы мәселелерді шешу бойынша ұсыныстар берілді. Анализ нәтижесінде Қазақстандағы электрондық коммерция контекстінде адам ресурстарын басқару бойынша ұсыныстар қарастырылды. Мақала екінші деректерге негізделген. Электрондық коммерция және адам ресурстарын басқару саласындағы соңғы зерттеулердің тенденцияларын анықтау және талдау мақсатында зерттеу тақырыбы бойынша SCOPUS дерекқорында жиі қолданылатын кілт сөздерді зерттеу үшін библиометриялық талдау жүргізілді. Web of Science, ResearchGate және Google Scholar дереккөздеріндегі авторлардың ғылыми жұмыстары талданды.

Кілттік сөздері: электрондық коммерция, нарық, адам ресурстары, онлайн сауда, сауда платформалары, онлайн платформалар, электрондық коммерция арналары, онлайн сатып алушылар, қызметкерлер

Управление человеческими ресурсами в электронной коммерции в Республике Казахстан

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Аннотация

Цель данной статьи заключается в предоставлении всестороннего анализа управления человеческими ресурсами в сфере электронной коммерции в Казахстане. Основное значение этого исследования состоит в предложении инновационных идей и расширении знаний в данной области, которая активно развивается в условиях цифровой экономики. Рассматривая текущие тенденции, проблемы и возможные решения, исследование становится ценным ресурсом как для академического сообщества, так и для профессионалов и лидеров отрасли. Представлен обзор литературы отечественных и зарубежных авторов по вопросам электронной коммерции и управления персоналом. Изучены особенности и направления развития человеческих ресурсов с учетом требований цифровой среды и необходимости адаптации цифровых решений к различным областям профессиональной практики. Приведены примеры успешного управления человеческими ресурсами и даны рекомендации по решению данных вопросов. В результате анализа выявлены рекомендации, которые предлагается использовать для управления человеческими ресурсами в контексте электронной коммерции в Казахстане. Статья основана на вторичных данных. Проведен библиометрический анализ для изучения наиболее часто используемых ключевых слов в базе данных SCOPUS по теме исследования, с целью выявления тенденций и анализа последних исследований в области электронной коммерции и управления человеческими ресурсами. Были проанализированы научные работы авторов из источников Web of Science, ResearchGate и Google Scholar.

Ключевые слова: электронная коммерция, рынок, человеческие ресурсы, интернет-покупки, торговые площадки, онлайн-платформы, каналы электронной коммерции, интернет-покупатели, персонал

Introduction

The emergence of the digital age has brought significant changes to our lives, affecting almost every aspect of it. One of the significant changes that has attracted the attention of decision-makers and economic actors is the development of e-commerce. It is developing rapidly and becoming a key player in the modern global and domestic economy. E-commerce covers a wide range of commercial activities, ranging from the sale of consumer goods to the provision of online services through digital platforms. This sector has not only changed the way companies interact with customers but has also had a significant impact on human resource management in this area. The digital revolution has changed traditional business models, creating new opportunities and new and unique challenges, such as managing human resources in this industry. E-commerce as a way of using the latest information technologies and the Internet is currently becoming the most important direction for the further development of trade operations. Today, e-commerce is developing at an active pace all over the world through the introduction of digital technologies in various spheres of life. In modern economic realities, the digitalization process is rapidly penetrating an individual's life and its individual functional areas into the business environment. These areas of activity also include the human resource management system. The emergence of online marketplaces and trading platforms has created new jobs and new regions for hiring new staff. This contributes to increased competition between companies and people who work in this field.

The primary purpose of this article is to identify critical trends in the field of human resource management in the context of e-commerce. Human resource management has always been one of the most rapidly developing areas of management. Company executives understand the need to introduce new management methods to increase the efficiency of using intangible assets. E-commerce poses challenges and provides a wide range of new HR solutions [1]. The relevance of the presented material is confirmed by the small number of foreign and domestic publications that comprehensively address the problem of human resource management in digital economies.

The scientific novelty of this article lies in its focus on human resource management in the field of e-commerce. The article provides an analysis of current problems faced by companies in this industry, such as low material motivation of employees, problems of remote work, high staff turnover, and a shortage of qualified specialists. The authors offer several recommendations and strategies to address these problems based on their own research and analysis of existing data. This approach not only helps to better understand the complexities of HR management in the e-commerce industry, but also offers concrete practical steps to improve the situation in this area. This article makes a significant contribution to the field of human resource management research by enriching our understanding of the specific nature of e-commerce work and offering valuable guidance to professionals and scholars in the field.

The article is structured as follows: the research problem, followed by a literature review, a description of the methodology, discussions and conclusions, at the end of the article the contribution and conclusions of the article will be presented.

Research problems

This article is devoted to human resource management in e-commerce. By contributing to the theoretical literature of science, the results of the analytical review can serve as a basis for further research, and the developed recommendations can become the basis for adaptation taking into account the needs of the scientific environment of Kazakhstan. Potentially significantly affect the problem of the shortage of qualified employees and their management in the scientific environment.

Literature review

As a result of the rapid development and influence of e-commerce on the global economy and the economy of Kazakhstan, there is a great demand for human resources, which causes great interest in science, as well as interest from world and domestic scientists in this topic. In the context of the digital age, the impact of e-commerce on the global economy is becoming more significant. Becoming an essential component of the modern economy, e-commerce has changed how businesses interact with their customers and caused serious upheavals in the global economy and human resource management. With the relentless development of technology, the need for human resource development has increased significantly along with the changing demands of the market and society. Forming the most critical resource in e-commerce requires increasing investments of various kinds.

At the same time, both contradictions in the use of human resources and the rate of devaluation of human capital are increasing, which leads to the assumption that the ongoing progress of technologies affecting the development of human resources is rapidly devaluing them, which causes many problems in the process of their use [2]. The impact of technological progress on human resource management became an object of economic research long before digitalization. Gerlind [3], in his works, pointed out the duality of a close relationship: technological changes contribute to both the creation and elimination of jobs. In modern conditions, the development of robotics and artificial intelligence will lead not only to the elimination of some professions but also to a significant change in the structure of labor demand, which requires a review of the entire educational policy, as well as making appropriate changes to the human resource management system [4]. In addition to manual labor, automation affects many cognitive jobs, primarily those related to performing standard operations, particularly in the service sector [5]. The innovative potential of human resource management ensures the management of personnel with the help of progressive resources and skills available to people. Using the creative activity of employees, the company has the opportunity to increase its influence on markets in the future [6].

The assessment of the level of human resources involves several areas of research: scientific skills, technical skills, social skills, and the ability to work with information (including digital) [7]. The development of the economy is taking place with new technologies and products that people create. Specialists should improve their professional skills, and digital tools can help them do this. Kruglov, in his works, touched upon the impact of digital technologies on the quality of human resources. In addition to

routine everyday tasks, specialists need to develop their creative and professional potential. Digital technologies make it possible to replace routine operations that were previously performed by staff [8].

Sayfullina studied human capital management in the system of digital economic relations. Digital knowledge and information are related to the fact that the circumstances causing the appearance of this resource are specific to the employee. For example, employees can integrate new knowledge, develop new ideas, and use human resources more efficiently and intelligently [9].

Lyaskovskaya and Kozlov, in their study, consider the problem of matching human resources to digital competencies and selecting the necessary number of human resources [10]. To solve this problem, scientists propose introducing artificial intelligence methods into the personnel competitiveness management system and implementing digital technologies in the functions of the human resource management system to complete the company's main stages of human resource development. According to Grudistova, in addition to knowledge, skills, and abilities acquired in educational institutions, individual psychological characteristics, communication skills, and digital competencies are also required; the ability to interact with other market actors in a digital environment, which emphasizes the need to identify the skills needed by managers [11].

Molotkova and Khazanova, in their research, focus on the transformation of the structure of digital human capital management, emphasizing the need to find specialists in this field who have an innovative vision of the process of digitization of the management system, the formation of new qualitative requirements for personnel, and the specification of requirements for the skills of employees of the company [12]. Krasnikova, in her work, examines the areas of human resource management, which have the potential for the development of digital human resources management in e-commerce, which include the main functions of the human resource management system [13].

Summarizing the information above, the development of e-commerce has had a significant impact on the global economy, including the economy of Kazakhstan. This process causes an increase in demand for qualified personnel, which attracts the attention of both scientists and practitioners. Technological advances are not only changing how businesses interact with customers but are also leading to significant changes in human resource management. This requires increased investment and a review of HR strategies.

The results of studies conducted by various scientists indicate the need to adapt to new conditions, namely, proper motivation of employees and hiring new qualified employees. To successfully cope with the challenges of the digital era, it is proposed that innovative approaches be used in personnel management. In general, the rapid growth of e-commerce challenges companies to reconsider their approaches to human resource management.

Thus, the rapid growth of e-commerce in economic and social conditions acutely raises the question of reconsidering essential aspects of human capital management. It is not only about increasing the requirements for companies' employees in connection with the introduction of high-tech products but also about changing the HR management model in response to new business demands. Despite the growing literature in this area, there remains a need for more context-sensitive research in all aspects. In particular, in the next year, countries such as Kazakhstan need to conduct more studies that integrate

analysis of e-commerce development to shed light on the mechanisms of proper human resource management in e-commerce settings. This study aims to bridge this gap and provides an analysis of the current challenges faced by companies operating in this field in specific Kazakhstan.

Methodology

The article was written based on secondary data. In the research area, we conducted a bibliometric analysis to study the most frequently used keywords in the SCOPUS database regarding the research topic, to identify the trend, and to study the latest trends on the subject of e-commerce and human resource management. The scientific works of the authors were analyzed and used from the sources Web of Science, Research Gate, and Google Scholar.

The research methods used are based on a thorough analytical review of existing world and domestic economic science methods. This study is based on an integrated approach, such as systematization and grouping statistical data (statistical synthesis of data). The systematization approach involves regulating human resource statistics related to e-commerce. This method describes the collection of data describing the position of e-commerce and the stage of its development in the Kazakhstan market, that is, based on the dynamics of the growth of e-commerce in the country. Visualization of statistical data collected using the method of grouping and systematization in the form of groupings and drawings is aimed at describing the number of e-commerce employees and sales volume year-on-year.

The materials used comparative analysis to compare the average salary between e-commerce workers and the average wage in Kazakhstan. The study is based on data from the report of the national labor market of Kazakhstan as well as data from the Committee of National Statistics for the period 2019-2022. To accurately achieve the purpose of the article, a logically structured method of conducting scientific research is used, which creates the prerequisites.

Due to this, the research process is divided into three critical stages, each of which includes several stages. The first stage, selection, and definition, is theoretical or conceptual and based on a literature review. The second stage is a comprehensive analysis of statistical data characterizing trends in e-commerce and human resource management. The third stage - identifying problems and developing proposals for improving human resource management in the field of e-commerce.

Results

The retail e-commerce market in Kazakhstan grew by 30% by the end of 2022 and reached 1.3 trillion tenge. The consulting company PwC Kazakhstan reported this in its study. The overall retail e-commerce market continues to grow, reaching 8.2% in 2022 (7.5% in 2021). Over the year, sales on marketplaces increased by 33% and in online stores by 19%. We can also see the share of sales on marketplaces growing in 2022, reaching 89%, up from 82% in 2021.

According to a study conducted by PwC Kazakhstan and the Association of Digital Kazakhstan (ADK), the volume of the e-commerce market will reach 1.3 trillion tenge in 2022 (in the previous year, it was estimated at 1.04 trillion tenge). At the same time, the authors of the study estimate the share of sales from marketplaces at 89% (67% on the global market) [14]. Euromonitor International also estimates the size of the Kazakh e-commerce market at 1.3 trillion tenge, although these statistics do not include online sales [15]. According to the National Bureau of Statistics, in 2022, the volume of the retail e-commerce market (domestic market), including marketplaces, amounted to 1,963.5 billion tenge, of which retail turnover through marketplaces amounted to 1,117.9 billion tenge (56.9 billion tenge). %), selling retail business. Goods through its online resource – 845.6 million tenge (43.1%). We see that in 2022, the share of e-commerce in retail trade, excluding marketplaces, was 5.4%. In 2023, the volume of electronic trade amounted to about 2.2 trillion tenge 2,203.1 billion tenge. According to the latest data, we can notice that the volume of e-commerce is growing every year (Figure 1).

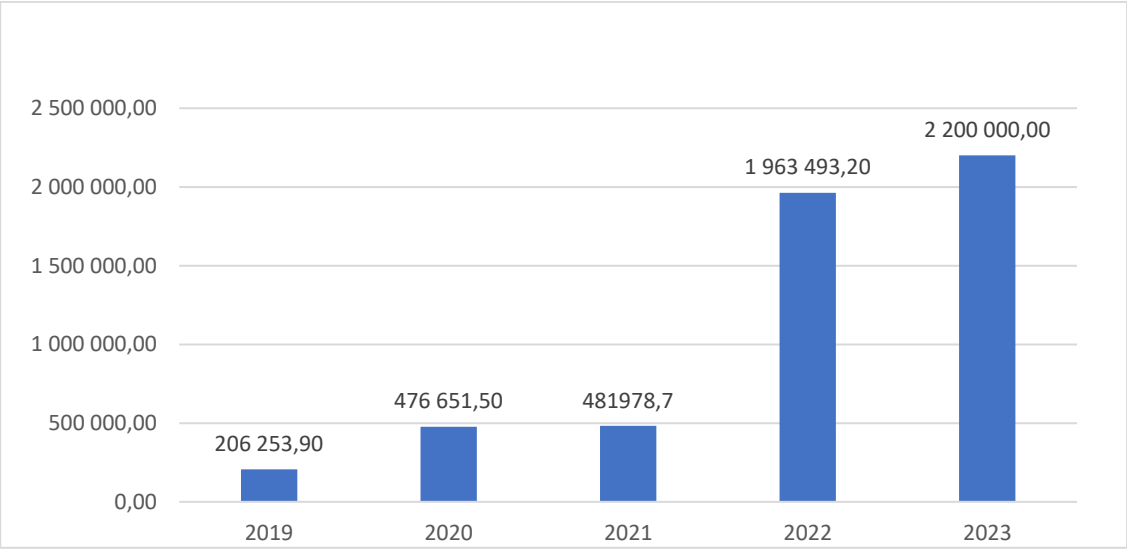

Figure 1. E-commerce sales volume

Note: compiled by the author based on sources [16]

Figure 1 shows the most significant growth in online retail sales in 2022 compared to other years. In 2022, online retail sales increased four times compared to 2021. And from 2019 to 2023, online trade volume has increased 13 times and is snowballing. The reason for this significant increase is people's frequent use of online shopping after the pandemic, as well as accessible and easy-to-use sites such as Satu.kz, Lamoda.kz, Kaspi.kz, Tomas.kz, Wildberries, Ozon. And Chinese Alibaba, Taobao, 1688 and Pinduoduo in Kazakhstan.

Figure 2 provides seems to show the share of sales for a particular sector or company over the years 2019 to 2023.

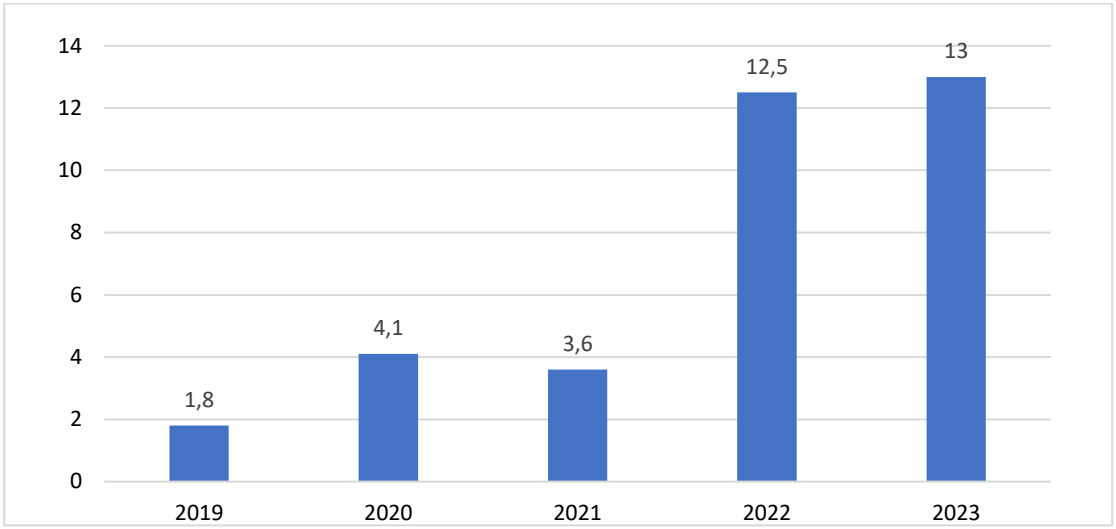

Figure 2. The share of e-commerce in total retail trade is expressed in %

Note: compiled by the author based on sources [16]

Figure 2 shows with the growth of e-commerce, the number of human resources that work in this field has begun to increase. According to the Bureau of National Statistics, the number of people employed in E-COMMERCE was 6.9 thousand people in 2019, 16.5 thousand in 2020, 23,612 people in 2021, 25729 workers in 2022, and in 2023 the number of internet commerce workers was 28789. Figure 3 provides data on the number of employees working in the e-commerce sector from 2019 to 2023.

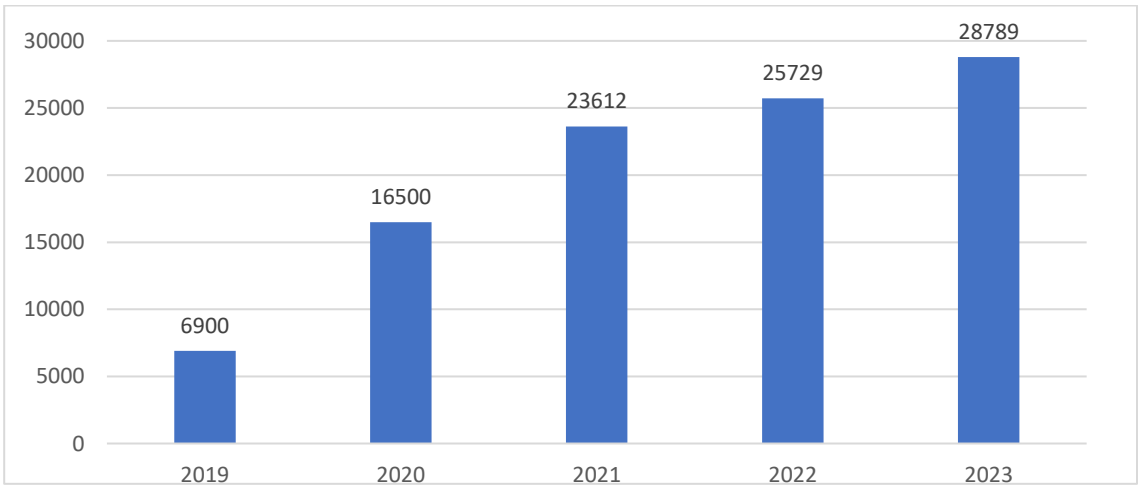

Figure 3. Number of employees in e-commerce

Note: compiled by the author based on sources [16]

Figure 3 shows that it should be noted that this number of employees works both in organizations and for entrepreneurs for whom Internet commerce was either the main or the only secondary activity. As a result, with the development of online trading, a shortage of qualified personnel in this area began to be acutely felt. According to Enbek. kz in 2022, there is a big difference in the number of resumes published on the website in the field of e-commerce with the number of open vacancies in this area, which indicates a lack of qualified human resources in the field of e-commerce.

The number of IT vacancies in 2021 increased by 52% compared to 2020; the most popular specializations were programming and development (54%), engineering (23%), system administration (20%), webmaster (17%) and web engineering (15%). Software developers and testers are in most tremendous demand from employers. Regarding the web and applications on the site, there are 4.6 thousand vacancies published, and the number of resumes is 4.2 thousand.

Next come graphic and multimedia designers with 2.5 thousand vacancies and 1.6 thousand published resumes. Developers and analysts of software and multimedia applications close the top three with 2.3 thousand vacancies and 2.2 thousand resumes. According to statistics, we can see that the number of published summaries is several times less than the number of applications [17]. To solve the problem of reducing the problem of shortage of qualified personnel in the field of e-commerce in Kazakhstan, the following solutions can be proposed:

Training and professional development: Organizing training programs and courses on various aspects of e-commerce, including digital marketing, web development, and logistics management, will help prepare qualified specialists. Establishing partnerships with universities and colleges to organize internships, practicums, and training courses in specialties related to e-commerce will help identify and prepare talented graduates.

Attracting international specialists and developing an internship and mentoring program: Inviting qualified specialists from other countries to work in e-commerce companies or organize joint projects and exchange experience can help improve the level of knowledge and skills of local personnel. Creating internship and mentoring programs for young professionals and graduates will allow them to acquire practical skills in e-commerce under the guidance of experienced professionals.

Investments in the development of IT infrastructure: The development of infrastructure and a technological base for training and development in the field of information technology will help create a favorable environment for the professional growth and development of specialists in the field of e-commerce.

Development of career programs and prospects: Creating attractive career paths and professional growth opportunities in e-commerce companies can stimulate motivation to learn and develop skills.

According to official statistics from the national bureau, despite the lack of qualified specialists in the field of e-commerce, there is also a high turnover of personnel in the field of e-commerce. According to enbek. kz, the highest staff turnover is observed among IT specialists aged 21-40 years. Researchers in the field of ICT change their jobs more often than others, on average 2.6 times per year, as well as administrators of local computer networks – 2.1 times per year. Statistics also show that men change jobs more

often than women. In general, IT specialists change jobs on average twice in 5 years [17]. To reduce staff turnover in e-commerce, a company can provide employees with opportunities for training, development, and professional growth, including participation in training, courses, and master classes. This helps increase their motivation and loyalty. Also, creating an open feedback system where employees can express their suggestions and comments, as well as participate in decision-making, helps improve employee satisfaction. It is worth noting that a balanced distribution of workload can help reduce labor turnover. Constantly monitoring workload distribution and ensuring that responsibilities are shared evenly among employees will help prevent overload and reduce the risk of burnout.

One of the problems of human resource management in e-commerce is the low material motivation of employees in this field. According to the Ministry of Labor and Social Protection of the Population, the average salary of e-commerce workers was 133 thousand in 2019, 155 thousand in 2020, 189 thousand in 2021, and 210 thousand in 2022. While the average wage in Kazakhstan for 2019 was 191 thousand, for 2020 it was 233 thousand, in 2021 it was 249 thousand tenge, in 2022 the average salary was 309 thousand tenge and in 2023 the average salary reached 310,000 tenge (Figure 4).

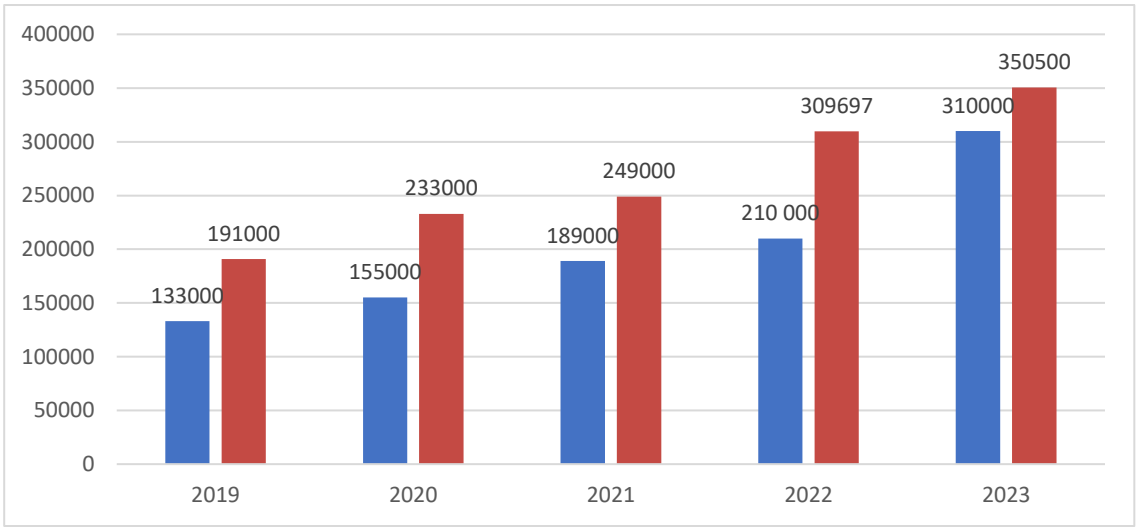

Figure 4. Average salary in e-commerce and Kazakhstan

Note: compiled by the author based on sources [18]

To solve the problem of employee motivation and engagement in the field of e-commerce in Kazakhstan, the following solution methods can be applied:

Providing opportunities for growth and development: Creating individual development plans, learning new skills, and providing opportunities for career advancement will help employees feel valued and motivated.

Reward and Recognize Achievement: Publicly recognizing and rewarding employee achievements, including outstanding performance or excellence in responsibilities, helps increase employee motivation and engagement.

Establishing a fair reward system: Ensuring a fair and transparent process for determining salaries, bonuses, and bonuses, as well as timely and adequate rewards for high performance, helps to increase employee motivation.

According to official statistics, in 2021 in Kazakhstan, the number of employees working remotely amounted to 53.8 thousand people, which is equal to only 0.6% of the total employed population. At the same time, there is a significant disproportion in the number of remote workers regionally. This phenomenon occurs most often in the Almaty region (18% of remote workers) and the city of Almaty (18%). This work format is least popular in the East Kazakhstan region (0.3%). In most cases, e-commerce uses remote work, which requires an effective system for managing remote employees, ensuring communication, and coordinating work [16].

According to the HeadHunter website, due to the consequences, first of all, there was an increased demand for remote work among both employers and job seekers. In 2020, we saw an increase in offers with the possibility of remote work by 59% compared to 2019, and in 2021 – already by 169% compared to 2019. Job seekers in 2021 began to look for work with a remote schedule three times more often than in 2019 [19]. The development of such a form of work as remote work leads to the fact that the classical formwork in a team, one of the historical fundamental components of workers' self-organization, which once led to the union of workers into trade unions - is under threat of extinction.

The spirit of collectivism is inherent in a society in close contact. In this regard, there is an increasing need to maximize the benefits of the social partnership system. Consolidation is significant not only at the level of an individual organization, but also joining efforts at a larger scale. A significant factor is to set clear expectations and goals: It is necessary to ensure that the expectations and work goals of each employee are understood by setting clear KPIs and deadlines for completing tasks. This will help avoid misunderstandings and ensure practical remote work. Regularly holding online meetings is also important to discuss current tasks, project progress and resolve issues. It is essential to organize a feedback system so that employees can share their thoughts and ideas, as well as receive constructive feedback from management.

Conclusion

In conclusion, it should be noted that with the development of online trading in Kazakhstan, there is an acute shortage of qualified personnel in this area. Statistics show a significant difference between the number of resumes published and the number of open positions in the e-commerce industry. To solve this problem, the following ways are proposed:

1) Training and development of employees, including organizing training programs and courses and establishing partnerships with universities for internships and practices.

2) Attracting international specialists and developing internship and mentoring programs for young professionals.

3) Investments in developing IT infrastructure for training and development in the field of information technology.

4) Creating attractive career programs and prospects for e-commerce employees.

However, in addition to this, one should take into account the high turnover of personnel in this area, caused by the low material motivation of employees. Establishing a fair compensation system and maintaining a team spirit in a remote work environment are important in solving this problem. It is essential to set clear expectations and performance goals for each employee and provide a feedback system for practical remote work. Only an integrated approach and joint efforts both at the level of individual companies and the level of the industry can ensure the sustainable development of e-commerce in Kazakhstan. In addition to the aspects mentioned above, two additional issues affecting the e-commerce industry in Kazakhstan should be addressed: remote work and low wages. Remote work, which has become more common due to the development of online technologies, creates new challenges for human resource management. While it provides flexibility and access to international labor markets, it can also lead to losing community spirit and weakening employee bonds. It is necessary to develop effective strategies to support teamwork and remotely communicate effectively to maintain professional connections and keep employee motivation levels high. In addition, low wages for employees in the e-commerce industry are becoming a significant factor affecting the industry's attractiveness to talented professionals. With rapid advances in technology and growing demand for skilled professionals, low pay can lead to talent attrition and the inability of companies to attract and retain highly qualified specialists. Establishing a fair and competitive compensation system is becoming essential to attracting and retaining talented employees in the e-commerce industry. Only by jointly solving these problems and developing comprehensive human resource management strategies can we ensure the sustainable development of e-commerce in Kazakhstan and achieve success in a rapidly changing market.

The study's results may be applicable in the following areas: development and improvement of training and personnel development systems in e-commerce companies, development of methods for attracting and retaining qualified personnel in e-commerce, and determining priorities for investment in IT infrastructure for training and development of information technology workforce. However, it's essential to acknowledge the study's limitations, including resource constraints and potential challenges in generalizing findings beyond the surveyed region. Further research, particularly delving into aspects like employee motivation and training, can provide deeper insights and facilitate exploring more comprehensive solutions to enhance e-commerce development and sustainability.

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Economic and health aspects of reducing air pollution in urban environments

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Abstract

The study aims to assess the current state of the environment, urban pollution levels, and demographic indicators. This comprehensive assessment is crucial for understanding the multifaceted impact of urbanization and industrial activities on public health and environmental sustainability. During the study, a detailed trend analysis of emissions of liquid, gaseous, and solid pollutants was carried out, spanning several years to identify patterns and fluctuations in pollution levels. The study meticulously quantified the types and volumes of pollutants emitted, providing a clear picture of the environmental burden faced by urban areas. The economic aspects of environmental protection costs and their impact on reducing pollutant emissions were considered. Additionally, demographic indicators were examined: the number of births, mortality, and the number of children with special educational development needs, in order to identify the relationship between the level of pollution and public health. The results show that despite increased investment in environmental protection, emissions levels remain high, and negative impacts on public health continue. The main sources of pollution have been identified: industrial enterprises and transport. Recommendations are proposed to improve the environmental situation, including strengthening emissions controls, improving waste management infrastructure, and promoting green technologies. The implementation of these recommendations can help improve the air quality and health of Almaty residents, the sustainable economic development of the city, as well as improve the quality of life of the population.

Keywords: urbanization, sustainable development, air quality, urban management, public health

Қалалық ортада ауаның ластануын төмендетудің экономикалық және денсаулық аспектілері

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Түйін

Зерттеу қоршаған ортаның қазіргі жағдайын, қаланың ластану деңгейін және демографиялық көрсеткіштерді бағалауға бағытталған. Бұл кешенді бағалау урбанизация мен өнеркәсіптік қызметтің қоғамдық денсаулық пен экологиялық тұрақтылыққа көп қырлы әсерін түсіну үшін өте маңызды. Зерттеу барысында сұйық, газ тәріздес және қатты ластаушы заттардың шығарындыларының егжей-тегжейлі тренд талдауы жүргізілді, ластану деңгейінің заңдылықтары мен ауытқуларын анықтау үшін бірнеше жыл бойына жүргізілді. Қоршаған ортаны қорғау шығындарының экономикалық аспектілері және олардың ластаушы заттардың шығарындыларын азайтуға әсері қарастырылды. Сонымен қатар, ластану деңгейі мен халықтың денсаулығы арасындағы байланысты анықтау мақсатында демографиялық көрсеткіштер зерттелді: туылғандар, өлім-жітім және ерекше білім беруді қажет ететін балалар саны. Нәтижелер қоршаған ортаны қорғауға инвестицияның ұлғаюына қарамастан, шығарындылар деңгейі жоғары болып қала беретінін және халықтың денсаулығына кері әсер ететінін көрсетеді. Негізгі ластау көздері анықталды: өнеркәсіптік кәсіпорындар мен көлік. Экологиялық жағдайды жақсарту, оның ішінде шығарындыларды бақылауды күшейту, қалдықтарды басқару инфрақұрылымын жақсарту және жасыл технологияларды ілгерілету бойынша ұсыныстар ұсынылады. Осы ұсынымдарды жүзеге асыру Алматы тұрғындарының ауасының сапасы мен денсаулығын жақсартуға, қаланың тұрақты экономикалық дамуына, сондай-ақ халықтың өмір сүру сапасын жақсартуға ықпал ете алады.

Кілттік сөздері: урбанизация, тұрақты даму, ауа сапасы, қаланы басқару, денсаулық сақтау

Экономические и здоровьесберегающие аспекты снижения уровня загрязнения воздуха в городских условиях

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Аннотация

Целью исследования является оценка текущего состояния окружающей среды, уровня загрязнения городов и демографических показателей. Эта комплексная оценка имеет решающее значение для понимания многогранного воздействия урбанизации и промышленной деятельности на здоровье населения и экологическую устойчивость. В ходе исследования был проведен детальный анализ тенденций выбросов жидких, газообразных и твердых загрязняющих веществ, охватывающий несколько лет, для выявления закономерностей и колебаний уровней загрязнения. Были рассмотрены экономические аспекты затрат на охрану окружающей среды и их влияние на уменьшение выбросов загрязняющих веществ. Дополнительно были рассмотрены демографические показатели: число рождений, смертность и количество детей с особыми образовательными потребностями в развитии, с целью выявления взаимосвязи между уровнем загрязнения и здоровьем населения. Результаты показывают, что, несмотря на рост инвестиций в охрану окружающей среды, уровни выбросов остаются высокими, а негативное влияние на здоровье населения сохраняется. Выявлены основные источники загрязнений: промышленные предприятия и транспорт. Предложены рекомендации по улучшению экологической ситуации, включая усиление контроля за выбросами, улучшение инфраструктуры для управления отходами и продвижение зеленых технологий. Реализация данных рекомендаций может способствовать улучшению качества воздуха и здоровья жителей Алматы, устойчивому экономическому развитию города, а также повышению качества жизни населения.

Ключевые слова: урбанизация, устойчивое развитие, качество воздуха, управление городами, здоровье населения

Introduction

Air pollution in urban areas is one of the most pressing environmental problems of our time, with significant health and economic impacts. As a result of intensive urban growth and industrialization, harmful substances such as nitrogen oxides, sulfur oxides, particulate matter, and carbon dioxide are released into the atmosphere. The primary sources of these pollutants include vehicles and heating systems, which emit significant amounts of contaminants every day, degrading air quality in cities [1].

Research shows that air pollution negatively impacts the productivity of urban residents, leading to a decrease in overall economic efficiency [2]. In addition, deteriorating air quality increases the incidence of illness among the urban population, causing various respiratory, cardiovascular, and cancer diseases [3]. In Europe, according to the European Environment Agency, every year, hundreds of thousands of people die prematurely due to air pollution, hospitalizations are rising, drug costs are rising, and millions of working days are being lost [4]. Economic growth and urbanization are contributing to increased air pollution, which poses complex challenges to environmental management and control. Studies conducted in various countries, including China, show that the fight against air pollution often conflicts with the objectives of economic growth, which requires the search for compromise solutions and the development of differentiated policies that take into account the characteristics of the industrial structure and the level of economic development of different cities [5].

One of the critical areas aimed at improving the environmental situation is the introduction of innovative environmental technologies. The introduction of renewable energy sources, increased energy efficiency, the development of sustainable transport, and the transition to a circular economy play an important role in reducing pollution and improving the quality of life of urban residents [6]. Eco-technologies help mitigate the negative impacts of urbanization and industrialization on the environment by improving the quality of air, water, and soil in urban areas [7].

Essential for reducing air pollution is implementing emission reduction measures, such as the closure of thermal power plants and the elimination of coal boilers, which can significantly reduce emissions of air pollutants and greenhouse gases in cities [8]. City governments play a crucial role in developing and implementing public policies to regulate emissions, enforce fuel standards, and control exhaust emissions [9].

The concept of sustainable development, adopted by the world community, focuses on protecting and restoring ecosystems, sustainable management of natural resources, and introducing environmentally friendly technologies. In the context of urban management, sustainable development implies the harmonization of human activities with natural systems, which allows for meeting the current generation's needs without harming future generations [10].

Thus, effective control of air pollution in urban areas requires an integrated approach, including developing innovative technologies, implementing measures to reduce emissions, and active participation of state and municipal authorities in environmental policy. This will not only improve air quality and public health but also promote sustainable economic development in cities.

Literature review

Air pollution in cities has significant economic consequences. Many researchers have found that air pollution negatively affects the productivity of city residents [11, 12, 13]. In urban areas, the primary sources of air pollution are transport and heating, which emit exhaust gases: nitrogen oxides, sulfur oxides, particulate matter, carbon dioxide, and others [14, 15].

In addition, there are a number of studies that have studied the impact of economic growth on air pollution in cities [16, 17]. Air pollution negatively affects human health, causing various types of diseases, such as respiratory and cardiovascular diseases, as well as cancer [18, 19]. In Europe, air pollution is causing hundreds of thousands of people to die prematurely each year, increasing hospital admissions, requiring more medication, and losing millions of working days. Many developing countries, such as China, are already taking steps to address this problem. China's emissions reduction policies are largely similar to those of the European Union. In many developing countries, the fight against air pollution conflicts with economic growth, creating serious obstacles to further development.

There are several researchers who are actively studying and analyzing the correlations between air pollution and economic growth in their countries. In particular, Chinese scientists propose a differentiated approach to policy development that considers the characteristics of the industrial structure and the level of economic development of different cities. They also put forward a number of policy and management proposals for discussion [20, 21]. Current environmental crises require innovative solutions to be financed and invested in order to improve the world's situation. Environmental investing is supportive and should contribute to environmental sustainability. This may include renewable energies, energy efficiency, sustainable transport, a circular economy, and green eco-technologies.

To protect, restore, and preserve the environment, the concept of sustainable development was adopted, where one of the Sustainable Development Goals for the period until 2030 is dedicated to “protecting, restoring and promoting the sustainable use of terrestrial ecosystems, sustainable forest management, combating desertification, and stopping and reversing reverse land degradation and halt biodiversity loss” (UN, Department of Economic and Social Affairs, Sustainable Development). The concept of sustainable ecology is a complex and evolving field that emphasizes harmonizing human activities with natural systems [22]. This involves meeting human needs without compromising the health of ecosystems and addressing environmental problems such as pollution, overpopulation, and resource depletion. Technology-based solutions are also considered crucial for achieving a sustainable environment [23,24].

The integration of eco-technologies in urban areas plays a critical role in improving environmental sustainability and resilience [25, 26, 27]. These technologies aim to mitigate the negative environmental and human health impacts caused by rapid urbanization and industrialization [28]. By focusing on areas such as water supply and sanitation, air pollution control, waste management, and sustainable mobility, eco-tech contributes to creating green, sustainable, and resilient cities. Strategies include using innovative green technologies to regenerate the urban environment, such as improving

air, water, and soil quality. The urban management concept incorporates these eco-technologies to address climate risks and improve the environmental sustainability of cities, emphasizing the importance of technological advances in restoring natural ecosystems in urbanized areas [29].

One solution to air pollution is to reduce gas pollution in cities by reducing urban green spaces and promoting sustainable technologies [30, 31]. Implementing structural emission reduction measures, such as the closure of thermal power plants and the elimination of coal boilers, can significantly reduce both air pollutant emissions and greenhouse gas emissions in cities [32,33]. City governments play a vital role in developing public policies to regulate emissions, enforce fuel standards, and control exhaust emissions to control air pollution effectively [34].

This article aims to analyze pollutants and demographic indicators in the city of Almaty.

Methodology

This article's methodology is based on a literature review and analysis of secondary panel data. This work included a literature review based on sources from the sources Web of Science, Research Gate, and Google Scholar on the impact of investments in the environment and public health. Figure 1 below shows the general methodology of the study.

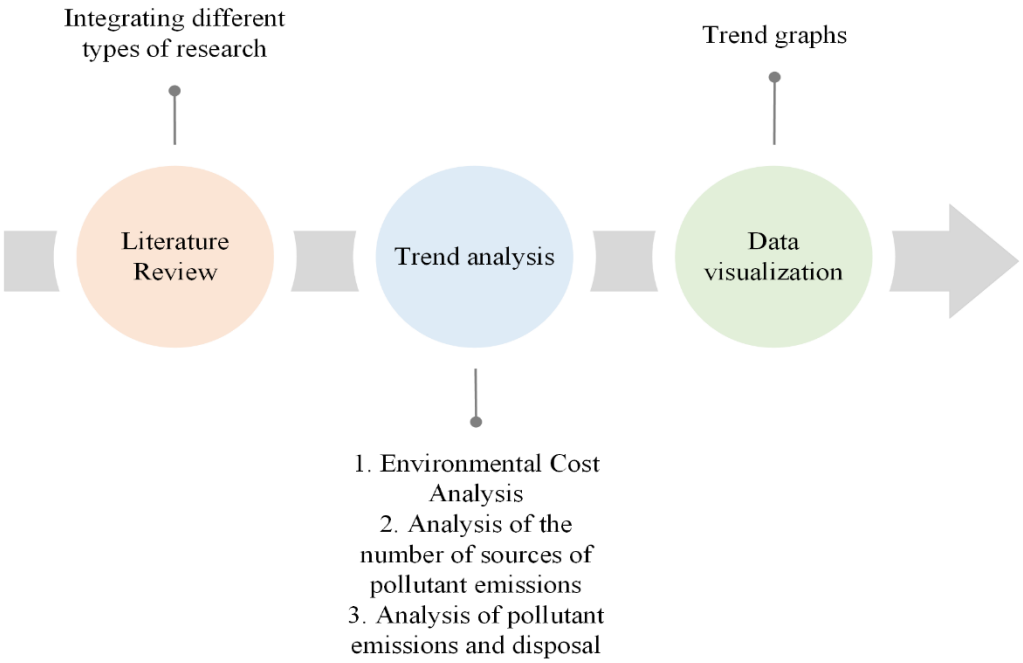

Figure 1. Research Methodology

Note: compiled by the authors

Foreign sources of gas pollution in cities and measures to apply ESG principles in companies were studied. When selecting literature, the key expressions "health economics in urban," "regional disparities," "urban ecosystem," "health outcomes," "health policy in urban," and "ecology in cities" were used. In total, more than 4,000 sources were received. Sources in English and Russian were selected, and the final sample included 23 sources. Next, we used aggregated government data obtained from the database of the Bureau of National Statistics of Kazakhstan.

Data was analyzed and interpreted to determine trends in positive and negative changes in the atmosphere in urban settlements, using the city of Almaty as an example. Trend analysis is an essential tool in statistics and data analysis that can reveal long-term trends and changes in data over time. In the context of the data presented, trend analysis helped determine how pollutant emissions, recycling, environmental costs, and demographics changed from 2012 to 2022.

Results

Research and study of emissions of solid, liquid, and gaseous pollutants, as well as volumes of recycled pollutants, are essential for solving the problem of environmental pollution in the city of Almaty. These indicators help assess the current state of the environment, as well as track progress in environmental protection. Analysis of data on pollutant emissions in the city of Almaty for the period from 2012 to 2022 is presented in Figure 2.

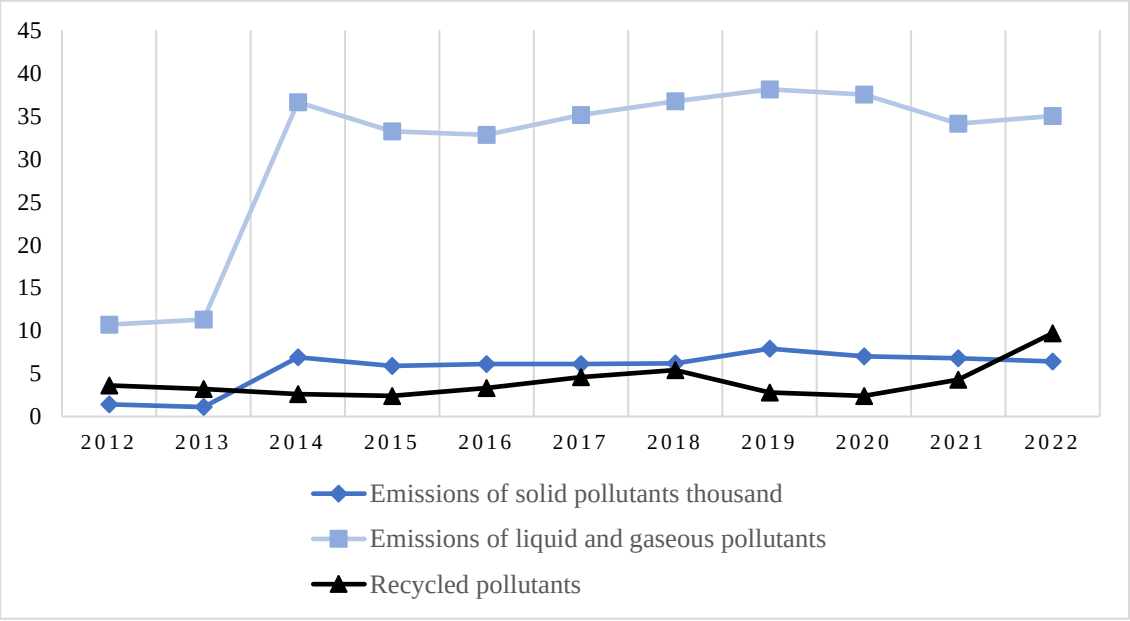

Figure 2. Pollutant emissions and disposal

Note: compiled by the authors based on source [35]

Based on the dynamics of the graph, it is clear that the most significant amount of pollution in Almaty's environment comes from emissions of liquid and gaseous pollutants. There has been an increase since 2012, with the exception of 2020, then the graph goes down, but it is not pronounced. Emissions of liquid and gaseous pollutants enter the environment from various sources, which can be divided into two categories. The first category is stationary sources - industrial enterprises that burn fossil fuels (coal, oil, gas), for example, to produce energy or heat. Also, because of garbage processing, when burned, the substances it produces have a detrimental effect on the urban ecology.

The second category is pollution from transport, and not only from cars. Overall, the graph shows a downward trend since 2012, with the exception of 2021. The environmental problems of the poor-quality city of Almaty lie in many vehicles, which increases yearly. With the increase in cars, the emissions of exhaust gases from gasoline, diesel, and other internal combustion engines increase. In addition to this primary source, the graph shows a less significant source - emissions of solid pollutants. Emissions of solid pollutants include metallurgical emissions: dust, ash, and metal oxides; emissions from construction: cement dust, asbestos, chemical emissions of soot and catalysts.

The level of recycling is significantly lower than the level of emissions of both solid and gaseous substances. The share of recycling ranges from 2.4 to 9.7 thousand tons per year for liquid and gaseous substances, which negatively impacts the environment. It is essential to understand that environmental pollution can lead to the problem of not only smog and acid rain but also have a negative impact on the health of urban residents. Further, Chart 3 presents data on environmental protection costs (thousands of tenge).

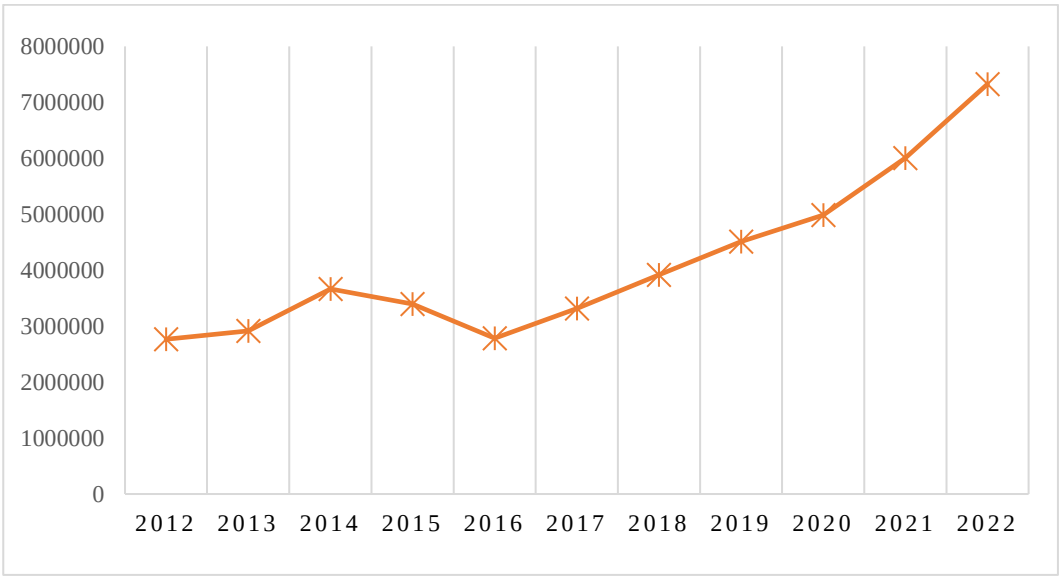

Figure 3. The volume of current costs for environmental protection, thousand tenge

Note: compiled by the authors based on source [35]

The graph shows a steady increase in environmental protection costs for the period from 2012 to 2022, increasing from 2,765,772 thousand tenge in 2012 to 7,326,231 thousand tenge in 2022. This trend indicates increasing government attention to the problem of environmental pollution. However, in this period, there have been years of decreasing costs. In 2015, expenses decreased by 270,928 thousand tenge compared to the previous year, and in 2016, they decreased by another 611,917 thousand tenge. The decrease in costs in these years can be explained by the economic situation, which caused the transition of the tenge to a free-floating regime. This economic context could have a negative impact on the budgeting of environmental programs. Next, graph 4 shows the dynamics of sources of pollutant emissions.

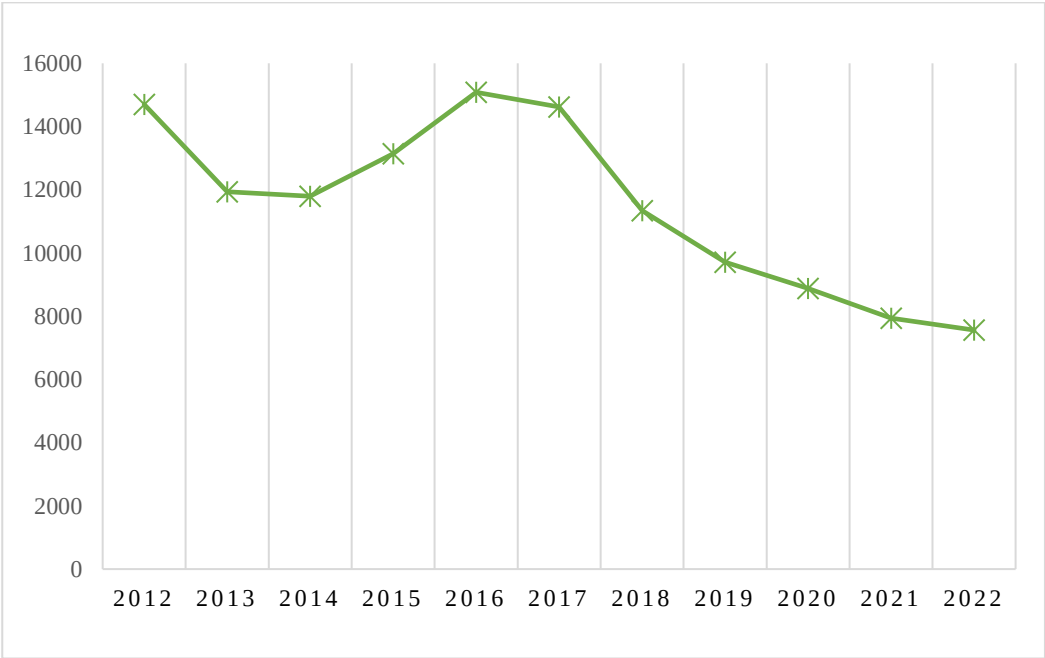

Figure 4. Number of sources of pollutant emissions

Note: compiled by the authors based on source [35]

The graph shows a decrease in the number of sources of pollutant emissions from 2012 to 2022, decreasing from 14,698 thousand in 2012 to 7,561 thousand in 2022. This general trend demonstrates positive dynamics in reducing environmental pollution. However, the period under review also saw years with an increase in the number of emission sources. In 2015, the number of sources increased by 1,341 thousand compared to 2014, and in 2016, this increase was 1,942 thousand compared to 2014. These fluctuations may be due to various factors, including changes in industrial activity and economic conditions.

Based on the provided graphs, one can notice an inverse relationship between the graph trends - an increase in investment in the environment leads to a decrease in the number of sources of pollutant emissions. This indicates increased government attention

to issues of urban environmental protection and increased efforts to solve environmental problems. But despite this, every year, more and more children with disabilities are born in Kazakhstan, and the birth rate is much lower than the death rate (Table 1).

Table 1. Dynamics of demographic indicators and the number of children with developmental disabilities

Year	Number of live births, in person	Number of deaths in person	Number of children with developmental disabilities in person
2012	26838	11230	8543
2013	27311	10819	6634
2014	29672	11049	7640
2015	31159	10579	8933
2016	31704	10794	10876
2017	31423	10935	12155
2018	33259	11678	13870
2019	34308	12240	13287
2020	35526	14440	9246
2021	37922	18220	13842
2022	36110	12221	15828

Note: compiled by the authors based on source [35]

Table 1 shows that the demographic situation in Kazakhstan is complex and ambiguous. There is an increasing trend in the number of live births, with the exception of a slight decrease in 2017 and 2022. The maximum number of births was recorded in 2021, reaching 37,922, which may be due to the COVID-19 pandemic, as many couples were quarantined in 2020. This temporary increase in the number of births indicates the influence of social and economic factors on demographic indicators.

The death toll also shows an overall upward trend, with the highest number of deaths in 2021 at 18,220, also due to complications from the COVID-19 pandemic. In 2022, the number of fatalities decreased to 12,221, which may indicate an improvement in the medical situation and living conditions of the population after the peak of the pandemic. These data highlight the importance of considering health and social factors when analyzing demographics.

The number of children with developmental disabilities also shows an increasing trend, with the exception of 2020, when a decrease was recorded to 9,246 cases. In 2022, this figure peaked at 15,828 cases. Many studies are proving the connection between environmental pollution and the birth of children with developmental disabilities. Emissions of greenhouse gases, heavy metals, nitrogen oxides, and other substances lead to congenital disabilities, low birth weight, congenital lung diseases, developmental delays, and other health problems in children. This highlights the need for strict environmental management to improve the health of future generations.

Conclusion

An analysis of pollutant emissions in Almaty from 2012 to 2022 provides essential information about the state of the city's environment and the effectiveness of current environmental protection measures. The following key conclusions can be drawn from the trend analysis:

Liquid and gaseous pollutants are the primary pollutants affecting Almaty's environment. These emissions have shown an overall increase since 2012, with the exception of 2020, likely due to decreased industrial activity during the COVID-19 pandemic. Despite a slight decline since 2020, emissions levels remain significantly high, requiring enhanced reduction efforts. The primary sources of these pollutants are industrial enterprises and vehicles, which are increasing yearly.

Solid pollutants, although less common than liquid and gaseous pollutants, still pose a significant environmental threat. These include industrial emissions such as dust, ash, metal oxides, and construction pollutants. The trend shows fluctuations, but the overall contribution of solid emissions to pollution remains significant.

Recycling levels of pollutants are significantly lower compared to emission levels. This highlights the need for improved waste management and recycling infrastructure to mitigate the negative impacts of pollution on the environment and public health.

Environmental costs have been steadily increasing, but periods of declining costs in 2015 and 2016, driven by economic difficulties, highlight the vulnerability of ecological program financing to economic fluctuations.

The reduction in the number of sources of pollutant emissions indicates positive dynamics in reducing sources of environmental pollution. However, temporary increases in the number of sources, as in 2015 and 2016, suggest that industrial and economic activity may temporarily reverse these gains. Continued efforts are needed to reduce emission sources further.

Demographic trends and health impacts have shown mixed results, with an overall increase in births and mortality rates. The COVID-19 pandemic has impacted these indicators. The number of children with developmental disabilities is also increasing, and there is evidence of a link between environmental pollution and the development of these disabilities. This highlights the need for strict environmental control to protect public health, especially children.

To solve the identified problems, the following recommendations are offered:

a) Strengthen emission control measures;
b) Improve recycling and waste management;
c) Ensure stable financing for environmental protection;
d) Promote green technologies;
e) Improve public health.

Implementing these recommendations will help Almaty significantly improve its environment's quality and provide its residents with a healthier future.

The Almaty Center for Environmental Problems and the Department of Natural Resources and Environmental Regulation of the city of Almaty can use the results of the analysis of pollutant emissions to develop and implement programs aimed at improving

the city's environmental situation. The Ministry of Health can use these results to create and implement programs to monitor public health and reduce the negative impact of pollutants on health.

Although the study covers the period from 2012 to 2022, additional data over a more extended period could help identify long-term trends and more clearly understand the impact of various policies and actions on air pollution levels. Also, a comparative analysis with other major cities in Kazakhstan or international metropolises with similar environmental problems could provide context for assessing the successes and shortcomings of current environmental protection measures in Almaty. Future researchers should pay attention to exploring the gaps.

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Investigation of Economic and Social Factors Determining Students' Choice of Rental Housing

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Abstract

This study is devoted to analyzing factors influencing students' choice of rental housing in Almaty city, Kazakhstan. The primary attention is paid to changes in the average cost of rent for the period from 2010 to 2020, the number of students, the level of youth employment, the price index for educational and housing services, the level of youth unemployment, the index of the physical volume of the total area of commissioned residential buildings and the cost of living. The study results show that the lowest rental prices were recorded in 2010-2011, followed by significant increases until 2015, driven by increased demand for rental housing. In 2021, rental costs will sharply increase due to the influx of students and migration to Almaty. The increase can also be partly explained by the economic impact of the pandemic, including inflation and changes in the labor market. The number of students studying in Almaty shows significant fluctuations, with a fall in 2011-2012 and an increase from 2016 to 2021. Youth employment rates have also fluctuated, peaking in 2015 and stabilizing in subsequent years. Analysis of the price index for educational and housing services shows a steady increase while the youth unemployment rate is declining. These data indicate a complex relationship between economic and social factors influencing the student rental market in Almaty. Understanding these relationships is essential for developing effective strategies to support students, including measures to ensure housing affordability and improve labor market conditions.

Keywords: real estate, students, employment, youth, human resources, socio-economic factors, labor resources

Студенттердің жалдамалы тұрғын үй таңдауын анықтайтын экономикалық және әлеуметтік факторларды зерттеу

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Түйін

Бұл зерттеу Қазақстанның Алматы қаласындағы студенттердің жалдамалы тұрғын үйді таңдауына әсер ететін факторларды талдауға арналған. Негізгі назар 2010 жылдан 2020 жылға дейінгі кезеңдегі жалдау ақысының орташа құнының өзгеруіне, студенттер санына, жастарды жұмыспен қамту деңгейіне, білім беру және тұрғын үй қызметтеріне баға индексіне, жастар арасындағы жұмыссыздық деңгейіне, пайдалануға берілген тұрғын үйлердің жалпы алаңының физикалық көлемі және өмір сүру құны. Зерттеу нәтижелері көрсеткендей, ең төменгі жалдау бағасы 2010-2011 жылдары тіркелді, одан кейін 2015 жылға дейін жалға берілетін тұрғын үйге сұраныстың артуына байланысты айтарлықтай өсу байқалды. 2021 жылы студенттер ағыны мен Алматыға көші-қонға байланысты жалға алу құнының күрт өсуі байқалады. Өсуді ішінара пандемияның экономикалық әсерімен, соның ішінде инфляциямен және еңбек нарығындағы өзгерістермен түсіндіруге болады. Алматыда оқитын студенттер саны 2011-2012 жылдары азайып, 2016 жылдан 2021 жылға дейін өсумен айтарлықтай ауытқуларды көрсетеді. Жастарды жұмыспен қамту көрсеткіштері де құбылып, 2015 жылы ең жоғары деңгейге жетті және кейінгі жылдары тұрақтанды. Білім беру және тұрғын үй қызметтеріне бағалар индексін талдау жастар арасындағы жұмыссыздық деңгейінің төмендеген кезде тұрақты өсімін көрсетеді. Бұл деректер Алматы қаласындағы студенттерді жалдау нарығына әсер ететін экономикалық және әлеуметтік факторлардың күрделі байланысын көрсетеді. Бұл қарым-қатынастарды түсіну студенттерді қолдаудың тиімді стратегияларын, соның ішінде тұрғын үйге қолжетімділікті қамтамасыз ету және еңбек нарығының жағдайын жақсарту шараларын әзірлеу үшін маңызды.

Кілттік сөздері: жылжымайтын мүлік, студенттер, жұмыспен қамту, жастар, адам ресурстары, әлеуметтік-экономикалық факторлар, еңбек ресурстары

Исследование экономических и социальных факторов, определяющих выбор студентами арендного жилья

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Аннотация

Это исследование посвящено анализу факторов, влияющих на выбор арендного жилья студентами в городе Алматы, Казахстан. Основное внимание уделено изменениям средней стоимости арендной платы за период с 2010 по 2020 годы, численности студентов, уровня занятости молодежи, индекса цен на образовательные и жилищные услуги, уровня молодежной безработицы, индекса физического объема общей площади введенных в эксплуатацию жилых зданий и величины прожиточного минимума. Результаты исследования показывают, что самые низкие цены на аренду жилья были зафиксированы в 2010-2011 годах, с последующим значительным ростом до 2015 года, обусловленным повышением спроса на арендуемое жилье. В 2021 году наблюдается резкое увеличение стоимости аренды, связанное с притоком студентов и миграцией в Алматы. Это увеличение также может быть частично объяснено экономическими последствиями пандемии, включая инфляцию и изменения на рынке труда. Численность студентов, обучающихся в Алматы, демонстрирует значительные колебания, с падением в 2011-2012 годах и ростом с 2016 года по 2021 год. Уровень занятости молодежи также колебался, достигнув пика в 2015 году и стабилизировавшись в последующие годы. Анализ индекса цен на образовательные и жилищные услуги показывает устойчивый рост, тогда как уровень молодежной безработицы снижается. Эти данные свидетельствуют о сложной взаимосвязи между экономическими и социальными факторами, влияющими на рынок аренды жилья для студентов в Алматы. Понимание этих взаимосвязей важно для разработки эффективных стратегий поддержки студентов, включая меры по обеспечению доступности жилья и улучшению условий на рынке труда.

Ключевые слова: недвижимость, студенты, занятость, молодежь, человеческие ресурсы, социально-экономические факторы, трудовые ресурсы

Introduction

The study's findings, derived from an analysis of economic indicators, youth employment, and educational trends, are of paramount importance. They identify critical trends and cycles affecting the housing rental market and serve as a crucial tool for improving students' living conditions and academic performance. The impact of affordable and high-quality housing on students' psychological well-being and social integration cannot be overstated, as it directly contributes to enhancing the quality of education.

The relevance of this study is due to a significant increase in the number of students in Almaty, which leads to an increase in the demand for rental housing. In recent years, Almaty has attracted students from other regions of Kazakhstan and abroad, which is connected with the development of educational institutions and international exchange programs. Understanding the factors that influence the choice of rental housing allows for a more effective meeting of students' needs and formulating strategies to stabilize and develop the rental market.

Understanding the factors influencing students' choice of rental housing is more than just necessary. This understanding is crucial for comprehending the rental housing market and providing comfortable conditions for students. The study aims to promptly identify the features of the rental housing market in this region, enabling swift action to address any issues.

The government of Kazakhstan is actively taking measures to improve the living conditions of students and support the rental housing market. One of the key directions is the development and modernization of student dormitories. As part of the state program "Development of Education and Science," new places are created in dormitories, and living conditions are improved in existing ones. Also, the government provides financial support to students through various grants and scholarships, which helps them cope with the costs of renting housing. These measures aim to reduce the burden on students and provide affordable and quality housing.

The University of Kazakhstan also significantly contributes to improving students' living conditions. Many universities implement programs to construct new dormitories and modernize existing ones, which helps to satisfy the growing demand for housing. The university is also actively working on creating a safe and comfortable living environment and implementing modern standards and technologies in the management of dormitories. In addition, universities often provide informational support to students, helping them navigate the housing rental market and choose the most suitable option. These efforts contribute to improving students' living conditions and academic performance.

Despite the commendable efforts of the government and universities, students in Almaty continue to face several challenges in the housing rental market. The high cost of housing rent, particularly in the city's central areas, poses a significant financial burden on many students. Economic instability and rising inflation further exacerbate these issues, forcing students to seek housing on the city's outskirts, increasing their transportation costs and time.

Another significant problem is the need for more quality and affordable housing. Despite the construction of new dormitories and the modernization of existing ones, the demand for student housing continues to exceed the supply. This leads to overcrowding of hostels and a decrease in living conditions. In addition, cases of unscrupulous behavior by landlords, including inflated prices, unsatisfactory conditions, and lack of official lease agreements, are often found in the housing rental market. All these problems create additional difficulties for students when searching for suitable housing and require further attention from the authorities and educational institutions.

The main goal of this study is to identify and analyze factors influencing the choice of rental housing by students in Almaty. To accomplish this objective, a comprehensive review of existing literature was performed. Covering various aspects of the rental housing market, economic indicators, youth employment, and educational trends. The analysis of previous studies devoted to similar issues in other regions and countries allowed the creation of a theoretical basis for interpreting the obtained data and identifying key factors influencing students' preferences. A comparative analysis with the results of other studies also helped to reveal the unique features of the rental housing market in Almaty and factors that may be specific to this region.

Literature review

Economic conditions are one of the main factors affecting students' choice of rental housing. A study conducted in Great Britain showed that the cost of rent, proximity to educational institutions, and the availability of a written lease agreement are significant factors influencing the choice of housing for students [1]. These results confirm that the economic availability of housing and the availability of legal guarantees are critical when deciding to choose housing. Another important economic factor is the availability of financial support and access to scholarships and grants. Research has shown that students from low-income families work more often to pay for school fees and housing rent, which can negatively affect their academic performance and the possibility of continuing their education [2]. In addition, the cost of living in the region also affects the choice of housing. Low living expenses can attract students and contribute to their decision to stay in a particular region for study [3].

The house's architecture and the feeling are considered essential aspects, as well as the location, when choosing housing for students. The results of studies show that when designing dormitories, it is necessary to consider students' preferences and the psychological component [4,5]. Social and infrastructural factors also play an essential role in the students' choosing rental housing. A study conducted in Norway revealed that students prefer housing in the central areas of cities and attach great importance to the quality of housing conditions, such as having their own kitchen and bathroom [6].

Social aspects include elements such as social integration and a sense of belonging, contributing to overall satisfaction with life. Studies show that students value the opportunity to interact with neighbors and create a friendly atmosphere and also highly value safety and privacy in their residences [7]. The importance of housing location and infrastructure quality is confirmed by other studies conducted in different countries,

including studies in Ghana, where students were more satisfied with housing chosen on the recommendations of friends and acquaintances [8].

Recent studies emphasize the importance of environmental factors when choosing housing for students. A study in China showed that the presence of green spaces and water bodies near campuses positively affects students' psychological well-being and reduces depression [9]. These data indicate the need to consider environmental factors in the planning and development of student housing. Psychological aspects and satisfaction with housing play a significant role in students' choice of rental housing. Studies show that the possibility of personalization of the living space and the architectural and aesthetic characteristics of housing affect the satisfaction of students and their sense of home comfort [10]. Students appreciate the opportunity to arrange housing according to their taste, contributing to their adaptation and psychological comfort.

Literary data indicate that economic, social, infrastructural, and environmental factors play a crucial role in students' choice of rental housing. The importance of these factors varies depending on students' specific conditions and preferences. Still, their consideration allows for the development of more effective strategies to meet students' needs and improve the quality of their lives.

Methods

For a deeper understanding of the factors affecting students' choice of rental housing in Almaty, a literature study was conducted covering various aspects of the rental housing market, economic indicators, youth employment, and educational trends. The literature review included analyzing previous studies and reports on similar issues in other regions and countries. This made it possible to create a theoretical basis for interpreting the obtained data and identifying key factors influencing students' preferences. A comparative analysis with the results of other studies also helped to reveal the unique features of the rental housing market in Almaty and factors that may be specific to this region.

A complex approach to collecting and analyzing data was used to study factors influencing students' choice of rental housing in Almaty. Data visualization was used as the primary analysis method, making it possible to identify and demonstrate critical trends and relationships between various indicators. The data was collected from official statistical sources, university reports, market studies, and economic indicators covering 2010 to 2021. The leading indicators included in the survey include average rent prices, the number of students, the price index for housing and education, the level of youth unemployment and youth employment, the index of the physical volume of residential buildings put into operation, and the size of the living wage.

The data was analyzed using various statistical methods, including calculating correlation coefficients to determine the relationship between variables. The correlation matrix was built to visualize the correlation relationships between the indicators, which allowed to demonstrate the strength and direction of the relationships clearly. Special attention was paid to indicators that significantly influence students' choice of rental housing, such as the cost of rent, the number of students, and youth employment. In addition, trends were analyzed, and critical periods of change for each indicator were

identified. This allowed us to determine the most significant relationships and draw reasonable conclusions. Data visualization includes the construction of scatter plots, line trends, and confidence intervals, which allowed a deeper understanding of the dynamics and influence of various factors on students' choice of rental housing in Almaty.

Results

Research on students choosing rental housing in Almaty includes many factors that students consider when deciding on their residence. Thus, this work, employing data visualization, reflects the indicators that can influence students' preferences in the choice of rental housing.

Figure 1 presents an analysis of data on changes in the average rent in Almaty from 2010 to 2020.

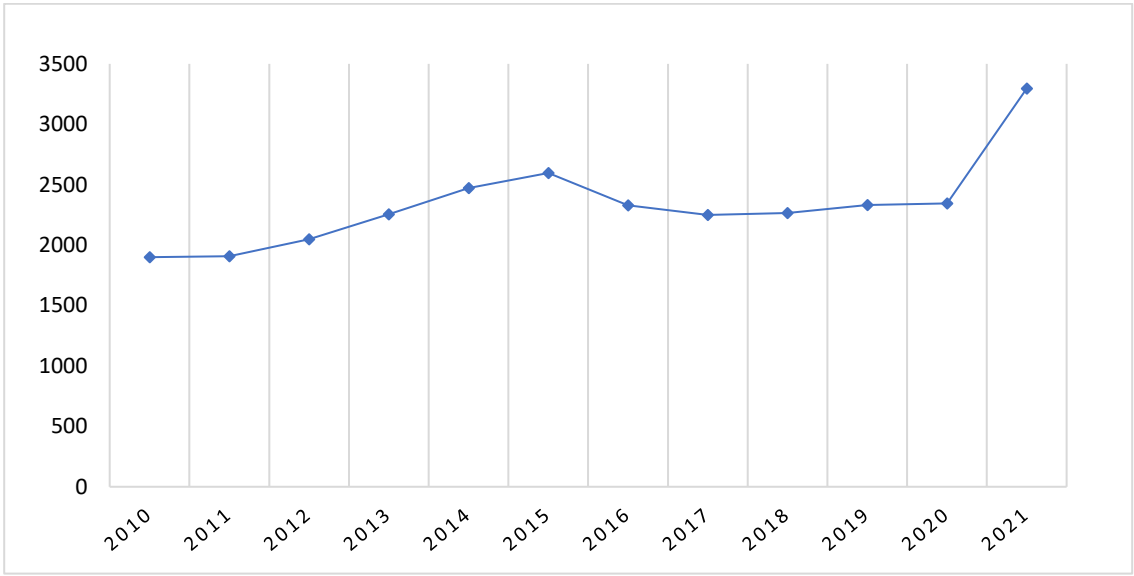

Figure 1. Average rent prices

Note: compiled by the authors based on source [11]

Thus, based on the specified graph, the lowest rent price is observed from 2010 to 2011. Where the price is set at about 2000 tenge per 1 square meter, this may indicate that during this period, the prices on the market were much lower than now. However, from 2012 to 2015, the price began to increase rapidly to 2597 tenge per 1 square meter, which indicates that the demand for rental housing is starting to grow. However, in 2018, the price dropped to 2,265 tenge per square meter, and the reason for this was the decrease in inflation in Kazakhstan. After that, a slight increase in the price will appear in 2020 to 2344 tenge per 1 square meter. However, the most noticeable increase in the price of rental housing is reflected in 2021, where the price is already 3296 tenge per 1 square meter. This sharp change is due to the high demand for temporary accommodation and a

significant influx of visitors, including students from Kazakhstan, who, in recent years, have preferred to study in Almaty city (Figure 2).

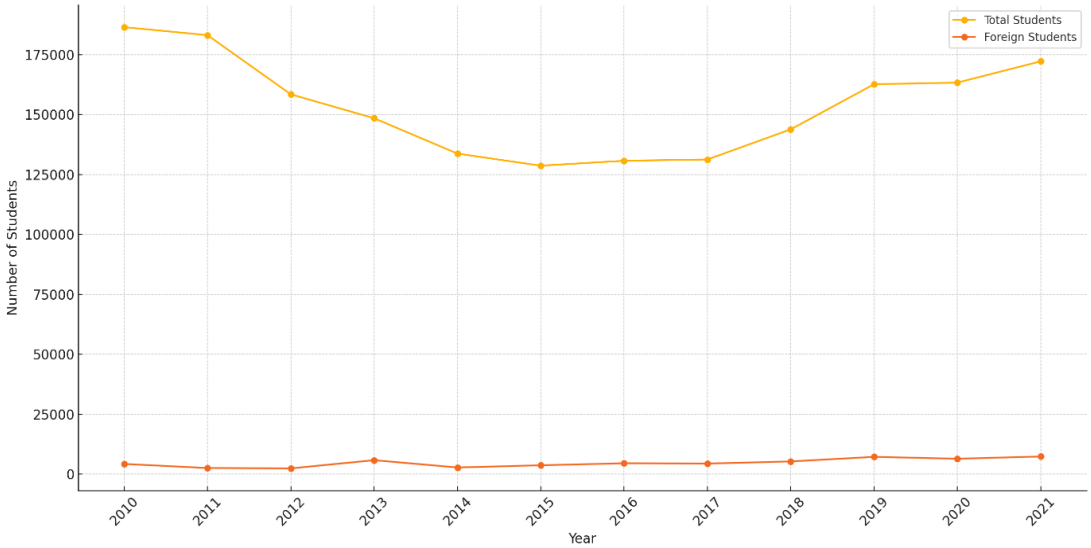

Figure 2. The number of student organizations and international students in Almaty city

Note: compiled by the authors based on source [11]

The figure shows the most significant number of Kazakhstani students studying in Almaty city in 2010, which is 186,499 people. This means that the city of Almaty was the priority when choosing a town for training. However, a significant decline began from 2011 to 2012, when the difference was 24,685 students. In the following years, there was also a decline to 128,707 people in 2015, Which means a decrease in demand for education in Almaty. Moreover, in 2016, the increase in students began again, from 130,761 students in 2016 to 143,860 students in 2018. From 2019 to 2021, there was a significant increase in the demand for education in the city of Almaty among students, which proves the increase in the number of students from 162,680 to 172,224. Such a change indicates that the city of Almaty is a priority for students when choosing a place of study.

The following, indicated in this figure, is the number of international students studying in Almaty. There has been a significant decrease in the number of international students, from 4,271 in 2010 to 2,421 in 2012. The reason for this may be the state's insignificant financing of education. However, in 2013, there was a sharp jump, and the number of students increased to 5,850. Based on the table, there is a constant change in the number of international students, which may be due to various factors that concern not only our country. However, as the number of students from Kazakhstan who prefer to choose the city of education in Almaty grows from 2019 to 2021, the growth of international students also increases for the same period. Such an increase indicates the development of the educational program and financing of educational institutions in Almaty.

Figure 3 presents an analysis of data on the employed youth of Almaty from 2010 to 2020.

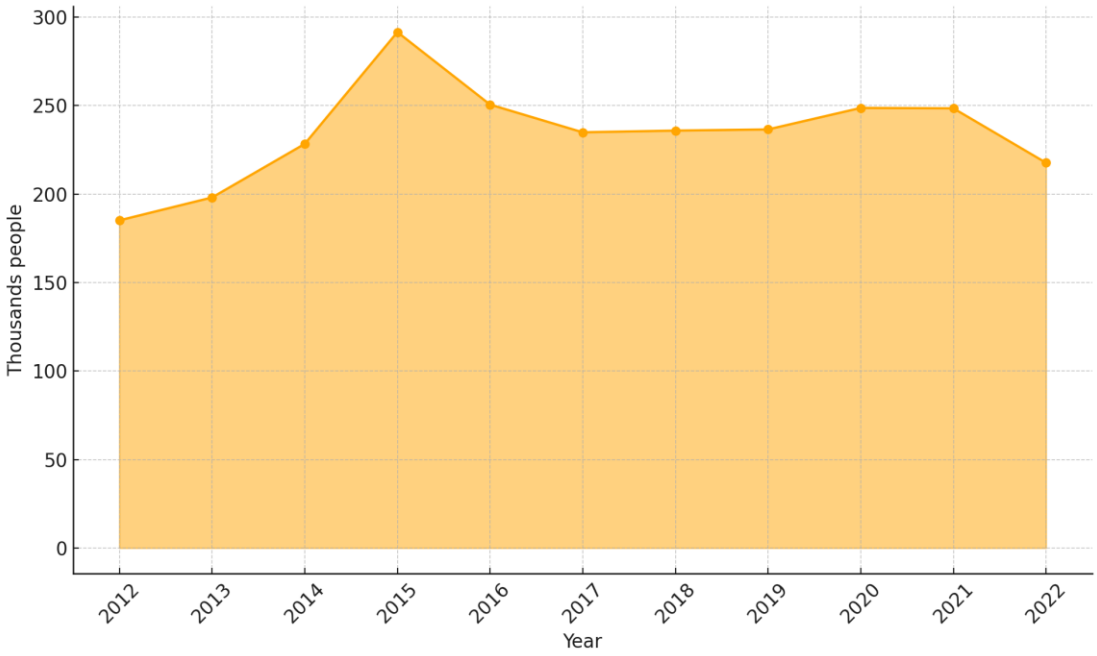

Figure 3. Employed youth of Almaty

Note: compiled by the authors based on source [11]

This graph shows the employment of youth in Almaty. From 2010 to 2014, there was a rapid increase, and the peak employment occurred in 2015, in which the number was 291,567 young people. The reason for this may be the need for additional income to meet one's needs due to rising prices in Kazakhstan, including rising prices for rental housing. This may be due to economic factors such as the need for additional income. Students were looking for flexible or part-time jobs. This job allowed me to combine work and study.

In the following years, there was a slight decrease in employed people to 236,573 in 2019. Because there could be problems with the limited number of workplaces, the need for more opportunities for students, and the inability to combine them with studies. However, the number of employed youth stabilized in the following years and reached 248,000 people. That speaks of a stable position of young people in the labor market.

The COVID-19 pandemic has significantly impacted Almaty's labor and rental market, creating new challenges for students and young people. Job cuts and a shift to remote work and training have reduced demand for rental housing in the city. Many tenants have faced financial difficulties, forcing property owners to lower rental rates or offer discounts to retain tenants. Students who lost their jobs or saw their incomes dwindle sought more affordable housing options or shared apartments with others to cut costs. However, the shift to remote work has also opened up new student opportunities.

Students looked for part-time jobs or internships online, which helped them remain financially independent even during the pandemic.

The following Figure 4 shows the prices for rental housing.

Figure 4. The level of youth unemployment, the price index of housing services, education, and the physical volume of the total area of residential buildings put into operation

Note: compiled by the authors based on source [11]

Examining the figure, it becomes evident that rental housing prices have weathered significant fluctuations from 2010 to 2021. Notably, the highest price growth was observed in 2016 (111.2%) and in 2013 (110.9%), periods that can be attributed to an increase in demand for rental housing driven by a surge in the number of students and migration to the city of Almaty. Conversely, the most significant decrease in rental prices occurred in 2019, amounting to 96.9%. This dip could be attributed to the oversaturation of the housing market or economic factors, such as a decrease in the population's income or a change in the terms of rent. However, the rental market has shown resilience, stabilizing prices in 2020 and 2021. Moderate growth in these periods (102.3% in 2020 and 106.5% in 2021) may be associated with the economy's gradual recovery after the crisis years and the stabilization of demand for rental housing.

The education price index shows steady growth throughout the considered period. The highest growth was observed in 2012 at 111.8%, which may be due to the increase

in the cost of educational services and the increase in requirements for the quality of education. Since 2015, education's growth rate has slowed, reaching 105.4% in 2021. The slowdown in growth may be caused by state regulation of education prices, an increase in the number of state grants and subsidies, or a decrease in demand for paid education.

The youth unemployment rate has demonstrated a promising downward trend, starting from 8.8% in 2010 and reaching 5.8% in 2021. A significant decrease was observed between 2010 and 2012, a period that can be attributed to state support measures aimed at creating jobs for young people, improving the economic situation, and increasing employment opportunities for young professionals. Despite some fluctuations in the unemployment rate, the overall trend paints a positive picture of the youth labor market situation. This could result from changes in the education system aimed at better matching the skills of graduates with the requirements of the labor market and the development of new sectors of the economy, such as IT and technology.

The index of the physical volume of the total area of commissioned residential buildings shows significant variability. The highest growth was observed in 2016 and amounted to 135.6%; the reason may be the increase in investment activity in the construction industry and state support measures for housing construction. A sharp decrease in the index in 2011, which is 73.4%, may result from economic difficulties, such as a decrease in the population's income, an increase in taxes, or an increase in the price of construction materials, which reduced the construction volume. After significant growth in 2016, the index will stabilize at the level of about 100-114% in the following years. This factor may indicate the stabilization of the construction market and the adaptation of developers to new economic conditions. The following figure 5 shows the size of the subsistence minimum.

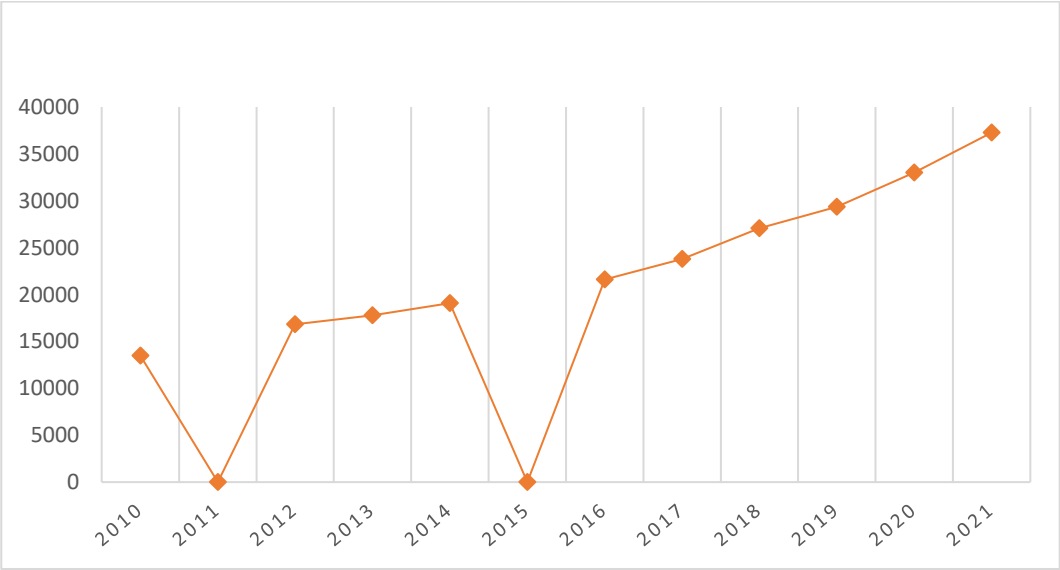

Figure 5. Value of subsistence minimum

Note: compiled by the authors based on source [11]

This graph shows the steady growth of the subsistence minimum in Kazakhstan from 2010 to 2021. Thus, in 2010, the minimum amount of subsistence was 13,487 tenge. 2011, increased to 16,072 tenge, possibly due to inflation and price increases for essential goods and services. Then there was a rapid increase and in 2012, the subsistence minimum reached 16,815 tenge, and in 2013 - 17,789 tenge. The increase in minimum subsistence in these years is probably due to the increasing prices of food, housing, and utilities. In 2014, the minimum subsistence amounted to 19,068 tenge, which also indicates the continuation of the increase in the cost of living. The data for 2015 showed that the subsistence minimum increased to 19,647 tenges, and in 2016 - 21,612 tenge. This growth may be related to economic shocks, such as exchange rate fluctuations and inflation, which affect the cost of imports. In 2017, the subsistence minimum amounted to 23,783 tenge, which reflects the continuing growth of expenses for basic life needs. From 2018 to 2021, there has also been a rapid increase in the subsistence minimum, from 27,072 to 37,266 tenge. A significant increase in these years can be caused by global economic factors, such as the COVID-19 pandemic, which affected the growth of food prices, medical services, and other vital goods.

Conclusion

For several reasons, studying factors affecting students' choice of rental housing in Almaty is essential. First, it helps to identify the critical economic, social, and infrastructure factors that determine students' preferences when choosing housing. Understanding these factors allows governments, universities, and private developers to develop more targeted and practical strategies to meet student needs. In turn, it improves students' quality of life, increasing their academic performance and overall social and economic stability in the region.

Secondly, the results of this study can serve as a foundation for further scientific and applied research in the field of urban planning and development of the housing rental market. By analyzing data for an extended period, the study provides valuable information about dynamics and trends in the housing market, which is crucial for forecasting and making informed decisions. Moreover, the study fosters the improvement of interaction between various interested parties, including government bodies, educational institutions, and the private sector, which is vital for a comprehensive approach to solving problems related to rental housing. Thus, the study not only helps to understand the current situation but also paves the way for sustainable development and improvement of students' living conditions in the future, instilling a sense of hope and optimism.

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The effect of exports and imports on the National income of Kazakhstan

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Abstract

The economic development of any country depends to a large extent on foreign economic activities such as exports and imports. The country has been actively integrating into the global economy in recent years, resulting in significant changes in its economic structure and dynamics. National income, a fundamental indicator of a country's financial health, shows dependence on various factors. This study is devoted to a detailed examination of the complex relationship between exports and imports and their impact on national income. The main objective of this study is to comprehensively analyze how international trade transactions, particularly exports and imports, affect a nation's national income. By clearly understanding this relationship, the study endeavors to identify the economic mechanisms at work. This knowledge can be helpful in developing effective trade strategies and understanding how international trade contributes to a country's economic growth and prosperity. The study establishes a theoretical framework that illuminates the relationship between international trade and national income. This involves examining established economic theories and models that explain the impact of trade on factors such as output, employment, and overall economic activity. A rigorous empirical analysis is then conducted to identify trends and patterns in the dynamics of imports, exports, and national income. This analysis uses accurate data to quantify the relationship between trade transactions and national income. By combining theoretical perspectives with empirical evidence, this study seeks to provide a robust understanding of how international trade affects the economic well-being of a nation.

Keywords: import, export, GDP, foreign trade turnover, national income, global economy, regional statistics

Экспорт пен импорттың Қазақстанның ұлттық кірісіне әсері

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Түйіндеме

Кез келген елдің экономикалық дамуы көбінесе экспорт пен импорт сияқты сыртқы экономикалық қызметке байланысты. Соңғы жылдары ел әлемдік экономикаға белсенді түрде интеграциялануда, нәтижесінде оның экономикалық құрылымы мен динамикасы айтарлықтай өзгерді. Елдің экономикалық әл-ауқатының іргелі көрсеткіші болып табылатын ұлттық табыс әртүрлі факторларға тәуелділікті көрсетеді. Бұл зерттеу экспорт пен импорт арасындағы күрделі қатынастарды және олардың ұлттық табысқа әсерін егжей-тегжейлі зерттеуге арналған. Бұл зерттеудің негізгі мақсаты халықаралық сауда операцияларының, әсіресе экспорт пен импорттың елдің ұлттық кірісіне қалай әсер ететінін жан-жақты талдау болып табылады. Осы қатынастар туралы нақты түсінік қалыптастыра отырып, зерттеу жұмыс істеп тұрған экономикалық механизмдерді анықтауға тырысады. Бұл білім тиімді сауда стратегияларын әзірлеуде және халықаралық сауданың елдің экономикалық өсуі мен өркендеуіне қалай ықпал ететінін түсінуде пайдалы болуы мүмкін. Зерттеу халықаралық сауда мен ұлттық табыс арасындағы байланысты көрсететін теориялық негізді құрудан басталады. Бұл сауданың өндіріс көлемі, жұмыспен қамту және жалпы экономикалық белсенділік сияқты факторларға әсерін түсіндіретін қалыптасқан экономикалық теориялар мен модельдерді зерттеуді қамтиды. Содан кейін импорт, экспорт және ұлттық табыс динамикасының тенденциялары мен заңдылықтарын анықтау үшін қатаң эмпирикалық талдау жүргізіледі. Бұл талдау сауда операциялары мен ұлттық табыс арасындағы байланысты сандық бағалау үшін нақты деректерді пайдаланады. Теориялық перспективаларды эмпирикалық дәлелдермен үйлестіре отырып, бұл зерттеу халықаралық сауданың ұлттың экономикалық әл-ауқатына қалай әсер ететіні туралы нақты түсінік беруге бағытталған.

Түйін сөздер: Импорт, экспорт, ЖІӨ, сыртқы сауда айналымы, ұлттық табыс, әлемдік экономика, аймақтық статистика

Влияние экспорта и импорта на Национальный доход Казахстана

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Аннотация

Экономическое развитие любой страны в значительной степени зависит от внешнеэкономической деятельности, такой как экспорт и импорт. В последние годы страна активно интегрируется в мировую экономику, что приводит к значительным изменениям в ее экономической структуре и динамике. Национальный доход, являющийся фундаментальным показателем экономического здоровья страны, демонстрирует зависимость от различных факторов. Данное исследование посвящено детальному изучению сложных взаимосвязей между экспортом и импортом и их влиянием на национальный доход. Основной целью данного исследования является всесторонний анализ того, как международные торговые операции, в частности экспорт и импорт, влияют на национальный доход страны. Путем установления четкого понимания этой взаимосвязи исследование стремится выявить экономические механизмы, действующие в данной области. Эти знания могут быть полезны для разработки эффективных торговых стратегий и понимания того, как международная торговля способствует экономическому росту и процветанию страны. Исследование начинается с установления теоретических основ, освещающих связь между международной торговлей и национальным доходом. Это включает в себя изучение установленных экономических теорий и моделей, объясняющих влияние торговли на такие факторы, как производство, занятость и общая экономическая активность. Затем проводится тщательный эмпирический анализ, целью которого является выявление тенденций и закономерностей в динамике импорта, экспорта и национального дохода. Этот анализ использует реальные данные для количественного определения взаимосвязи между торговыми операциями и национальным доходом. Комбинируя теоретические взгляды с эмпирическими данными, данное исследование стремится предоставить надежное понимание того, как международная торговля влияет на экономическое благополучие нации.

Ключевые слова: импорт, экспорт, ВВП, внешнеторговый оборот, национальный доход, мировая экономика, региональная статистика

Introduction

National income, a fundamental metric of a nation's economic health, is influenced by various factors, with international trade playing an increasingly significant role in today's globalized environment. This study delves into the intricate relationship between exports and imports and their impact on national income. The primary purpose of this research is to comprehensively analyze how international trade activities, specifically exports and imports, influence a nation's national income. By establishing a clear understanding of this relationship, the study aims to illuminate the economic mechanisms at play. This knowledge can be instrumental in formulating effective trade strategies and understanding how international trade contributes to a nation's economic growth and prosperity.

International trade can significantly impact national income through various channels. Exports generate revenue for a country and can stimulate economic activity by increasing production and employment. Exporting goods and services often leads to economies of scale and a more efficient allocation of resources [1]. Imports, on the other hand, provide consumers with a wider variety of goods and services, often at lower prices than domestic products, which can enhance consumer welfare and increase the overall standard of living [2]. Moreover, imports can facilitate access to crucial inputs for production processes, thereby boosting industrial productivity and innovation.

In Kazakhstan, for instance, the dynamics of oil exports have a pronounced impact on national income. As one of the world's significant oil exporters, fluctuations in global oil prices can lead to substantial variations in national revenue. Kazakhstan's economic performance is closely tied to its export activities, particularly in the oil sector, which constitutes a significant portion of the country's GDP [3]. According to the World Bank, Kazakhstan's oil exports accounted for nearly 60% of its total exports in recent years, highlighting the sector's critical role in the national economy [4]. Additionally, Kazakhstan ranks among the top 15 oil producers globally, underlining its importance in the global energy market [5].

Beyond oil, Kazakhstan's trade patterns include exports of metals, machinery, and agricultural products, each contributing to national income in different ways [6]. The empirical analysis in this study will consider such sector-specific influences and broader trade patterns, helping to isolate the effects of exports and imports on national economic performance. This analysis will leverage real-world data to quantify the relationship between trade activities and national income, drawing on sources such as government trade reports, international trade databases, and national economic accounts.

In conclusion, this study aims to bridge the gap between theory and practice in understanding the relationship between international trade and national income. By analyzing the impact of exports and imports on economic growth, we hope to contribute to the development of informed trade policies that support national prosperity in an increasingly interconnected global economy. Our research highlights the importance of strategic trade initiatives, diversification of export products, and strengthening of trade partnerships. By providing a comprehensive analysis of how trade activities influence national income, we aspire to offer valuable insights for policymakers to craft strategies

that boost economic growth and ensure sustainable development and resilience against global economic fluctuations.

Literature review

This section provides a detailed discussion of various economic factors and their impact on Kazakhstan's trade, specifically exports and imports. It includes findings from existing literature related to the research topic and develops a conceptual framework to test the variables identified in the current study. International trade and its complexities have long been studied and remain a focal point of debates worldwide. Various researchers have identified and explained different factors affecting global trade, suggesting that combining these factors influences a country's overall trade.

Trade theories such as comparative advantage and the Heckscher-Ohlin model offer insights into the determinants of trade patterns and the gains from specialization. These models suggest that countries with abundant labor relative to capital will specialize in and export labor-intensive goods. In contrast, countries with abundant capital relative to labor will specialize in and export capital-intensive goods. The role of international institutions in facilitating trade and resolving disputes underscores the importance of multilateral cooperation in promoting global economic integration [7]. Similarly, recent studies emphasize that trade can lead to technological innovation and productivity improvements, enhancing national economic welfare [8].

A significant body of literature addresses the impact of export reliance on primary products. The Prebisch-Singer hypothesis and subsequent works argue that an economy's reliance on the production and export of primary products exposes it to secular terms-of-trade deterioration, ultimately causing continual trade balance deficits, balance of payment crises, and eventually halting sustained economic growth [9]. Recent studies also support these findings, emphasizing the need for diversification to mitigate economic [10]. Unlike earlier studies, recent research focuses more on the role of global value chains and the importance of integrating into these chains to achieve economic stability [11].

On the other hand, Imports provide consumers with a broader variety of goods and services, often at lower prices than domestic products, enhancing consumer welfare and improving the overall standard of living [12]. Moreover, imports can facilitate access to crucial inputs for production processes, thereby boosting industrial productivity and innovation. However, there are also concerns about the potential negative impacts of imports on domestic industries and employment. High import levels of machinery parts, electrical appliances, and food can lead to trade imbalances and dependency on foreign markets [13]. Recent studies expand on these points, examining how imports of intermediate goods contribute to domestic productivity growth and innovation [14].

The mechanisms and consequences of exchange control regimes have been studied extensively, emphasizing their impact on international trade dynamics and national economic development. Exchange controls can distort trade patterns, hinder market efficiency, and impede economic growth. The trade-offs between exchange rate stability and export competitiveness highlight the complexities of managing currency regimes [15].

A country's overall trade turnover, which includes exports and imports, is another critical factor in understanding its economic health. High trade turnover indicates active participation in the global economy, which can lead to increased economic opportunities, technological transfers, and enhanced productivity. The relationship between trade turnover and GDP growth has been positive in many cases, with trade acting as a catalyst for economic development. Recent studies also highlight the role of digital trade and e-commerce in boosting trade turnover and economic growth [16].

Currently, Kazakhstan aims to leverage its natural resource wealth while simultaneously diversifying its export base and enhancing competitiveness in the global market. By addressing these insights from previous studies, Kazakhstan can further integrate into the global economy and achieve sustainable economic growth and development [17]. The significance of trade for GDP growth in Kazakhstan is underscored by its reliance on oil and gas exports, which constitute a significant portion of the country's GDP. Diversification of exports and strategic import management are crucial for sustaining long-term economic growth. Thus, it is essential to study the impact of exports on GDP and how exporting significant products, such as oil and gas, influences economic growth in Kazakhstan.

Methodology

As demonstrated by constructing a multiple regression equation, gross domestic product (GDP) changes depend significantly on foreign economic activity indicators. This study uses the initial data of Kazakhstan's annual macroeconomic indicators for 2012-2022. Employing an a posteriori approach, all factors selected during the content analysis stage were consistently included in the model. The factors analyzed include GDP (in million dollars), foreign trade turnover (in billion tenge), export volume (in million dollars), and import volume (in million dollars).

To explore these relationships, the study employs a correlation matrix to examine the association between Kazakhstan's GDP and its foreign trade turnover. The correlation matrix provides a measure of the strength and direction of the linear association between these two variables. Data on Kazakhstan's GDP and foreign trade turnover were collected from reputable sources such as the World Bank and the Kazakhstan National Bureau of Statistics (stat.gov.kz) to ensure data quality.

The multiple regression analysis incorporates the following macroeconomic indicators:

1. GDP (in million dollars)
2. Foreign trade turnover (in billion tenge)
3. Export volume (in million dollars)
4. Import volume (in million dollars)

Using these indicators, the regression equation helps understand how variations in foreign trade activities impact GDP. Previous studies have used similar approaches to link trade and economic growth, demonstrating the importance of exports and imports in influencing national economic performance (Narayan & Smyth, 2018; Zahonogo, 2016).

The correlation matrix analyzes the relationship between GDP and foreign trade turnover. The matrix provides a quantitative measure of how closely related the changes in GDP are to the fluctuations in foreign trade turnover.

Scatter plots and Q-Q plots are employed to visualize these relationships. Scatter plots are created using the Jamovi application to depict the relationship between GDP and foreign trade turnover, and separate Q-Q plots compare the quantiles of GDP with the quantiles of exports and imports. These visualizations help in understanding the distribution and correlation of these economic indicators.

For a comprehensive analysis, import and export data by region were collected and reviewed, identifying the most essential products in these areas. Significant exports include oil and gas, while major imports comprise machinery parts, household goods, electrical appliances, and food. These data are visually represented through map illustrations and export and import dynamics graphs.

Map illustrations and graphs provide a geographical perspective on trade activities, showcasing regional disparities and the distribution of significant products. This geographic analysis helps identify regions that contribute most significantly to national exports and imports.

Kazakhstan aims to leverage its natural resource wealth while diversifying its export base and enhancing competitiveness in the global market. By addressing insights from previous studies and incorporating recent empirical data, Kazakhstan can further integrate into the global economy and achieve sustainable economic growth.

The significance of trade for GDP growth in Kazakhstan is underscored by its reliance on oil and gas exports. Diversification of exports and strategic import management are crucial for sustaining long-term economic growth. Hypotheses were formulated based on these factors:

Hypothesis 1: A positive relationship exists between the export of significant products such as oil and gas and GDP growth in Kazakhstan.

Hypothesis 2: There is a negative relationship between the import of significant products, such as machinery parts, electrical appliances, and food, and GDP growth in Kazakhstan.

Hypothesis 3: A positive relationship exists between foreign trade turnover and GDP growth in Kazakhstan.

Analysis

After Kazakhstan gained its autonomy, the changes it had made in foreign exchange, Kazakhstan's high import-export potential, and critical advancements within the field of foreign exchange in the national economy developed. Concurring to Trade Map information, Kazakhstan is positioned 50th within the world in terms of add up to trades and it is within the 62nd put in terms of imports.

First, we present in Table 1 correlation matrix for Foreign trade turnover and GDP.

Table 1. Correlation matrix for Foreign trade turnover and GDP

Model	Correl.	Foreign trade turnover	GDP

Foreign trade turnover	Pearson's r	—	
	95% CI Upper	—	
	95% CI Lower	—	
GDP	Pearson's r	0.346	—
	95% CI Upper	0.783	—
	95% CI Lower	-0.320	—

Note[1]: * p < .05, ** p < .01, *** p < .001
Note[2]: complied based on the calculations

The Pearson correlation coefficient between GDP and foreign trade turnover is 0.346. The 95% confidence interval for this correlation ranges from -0.320 to 0.783. This positive correlation suggests that there is a tendency for countries with higher GDP to have higher foreign trade turnover, although the wide confidence interval indicates variability in this relationship.

The R^2 value suggests that while exports and imports are important, they do not capture all factors influencing Kazakhstan's GDP. Other elements such as domestic policies, investment levels, and global economic conditions could also play significant roles. The negative, non-significant coefficient for exports suggests that within this period, exports did not have a significant direct impact on GDP. This might be due to fluctuating global commodity prices or dependency on a narrow range of export products, primarily oil and gas. Diversifying exports and enhancing value-added products could potentially improve this relationship. The positive coefficient for imports, though not highly significant, indicates that imports are beneficial for GDP growth. This reflects the importance of imports in providing critical goods and services that boost productivity and innovation.

For Kazakhstan, these results underline the importance of both improving export diversification and managing imports efficiently to ensure they contribute positively to the economy. Policies aimed at enhancing the quality and value of exports, as well as fostering an environment where imports can complement domestic production, are crucial. The analysis highlights the complex relationship between trade activities and economic growth. While imports show a more direct positive influence on GDP, exports require strategic enhancements to significantly impact economic growth. Future studies should incorporate additional variables and possibly longer time frames to further elucidate these dynamics and guide effective economic policies.

Next, in Figure 1 we present correlation plot between foreign trade turnover and GDP.

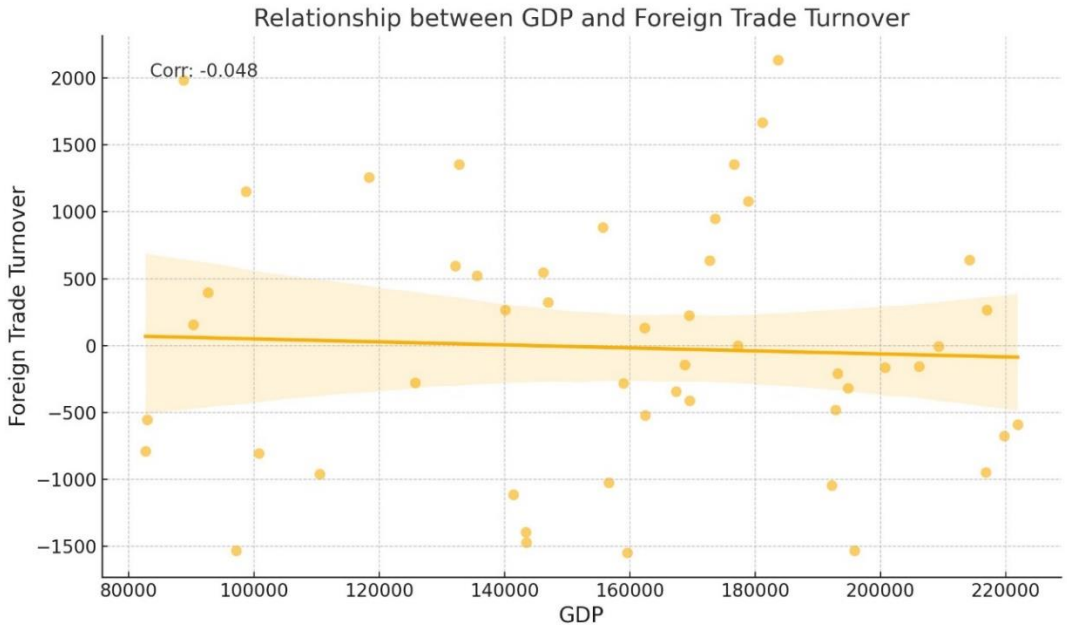

Figure 1. Correlation plot between foreign trade turnover and GDP

Note: compiled based on the calculations

The plot illustrates a moderate positive correlation (0.346) between foreign trade turnover and GDP, as indicated by the ascending regression line within the confidence band. Next, the scatter plot reveals a dispersed set of data points, underpinning the broad confidence interval in the correlation matrix. The curves above each axis likely represent the density distribution of each variable, providing a visual representation of the data spread, with peaks indicating the most common values. This reinforces the uncertain relationship between these two economic indicators. Next, in Table 2, we present an analysis of clusters.

Table 2. Cluster analysis

The sum of squares Table		Centroids of Clusters Table			
Cluster No	Value	Export	Import	Foreign trade turnover	GDP
Cluster 1	1.04e0+9	85247.433	48699.467	133946.867	210365.333
Cluster 2	6.45e0+9	54711.800	35068.975	89780.700	176959.750
Between clusters	9.13e0+9				
Total	1.66e+10				

Note: compiled based on the calculations

The K-means clustering analysis effectively differentiates between clusters based on key economic indicators. Cluster 1, with three entries, shows significantly higher averages in exports, imports, foreign trade turnover, and GDP compared to Cluster 2, which has eight entries. This suggests that the entities in Cluster 1 might be more economically robust or involved in more intensive trade activities. The sum of squares (1.66e+10), with a notable portion between clusters (9.13e+9), indicates a clear distinction and substantial variability between these two groups. Next, in Figure 2, there is a means plot across clustering.

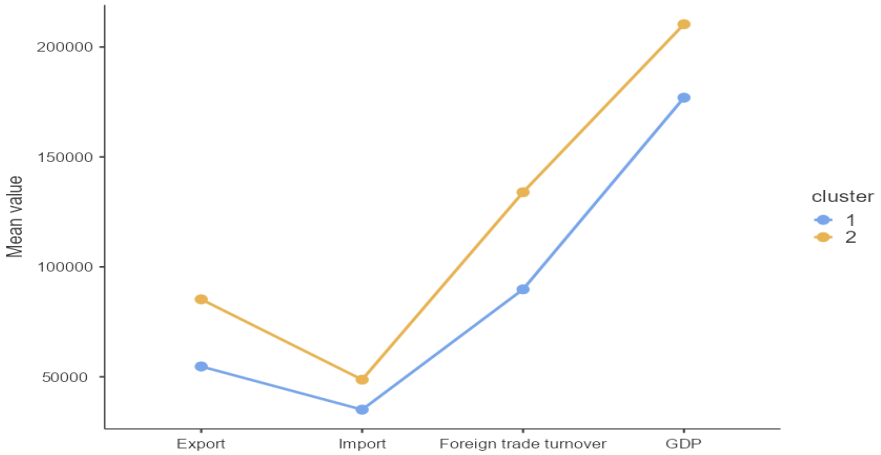

Figure 2. Plot of means across clustering

Note: compiled based on the calculations

The plot illustrates the mean exports, imports, foreign trade turnover, and GDP values across two clusters. The orange line, representing Cluster 1, consistently shows higher mean values across all economic indicators compared to the blue line for Cluster 2. This stark contrast highlights significant differences in economic activity between the clusters, suggesting that entities in Cluster 1 are more economically active and influential. The pattern across the metrics underscores the importance of trade volume and economic output in distinguishing these clusters. Fifth, in Table 3, the model coefficient results are shown.

Table 3. Model coefficients results

Model Fit Measures					
R -0.612			R^2 - 0.375		
Model Coefficients - GDP					
No.	Predictor	Estimate	SE	t	p
1	Intercept	114631.39	35097.569	3.27	0.011
2	Export	-1.14	0.861	-1.32	0.222
3	Import	3.70	1.878	1.97	0.085

Note: compiled based on the calculations

The multiple regression analysis conducted to understand the impact of exports and imports on Kazakhstan's GDP from 2012 to 2022 yielded the following results. The coefficient of determination, R^2, is 0.375, indicating that approximately 37.5% of the variability in GDP can be explained by variations in exports and imports. While this represents a moderate fit, it suggests that other factors not included in the model might significantly influence GDP.

The model coefficients provide further insights. The intercept of 114,631.39 is statistically significant ($p = 0.011$), indicating that when exports and imports are zero, the baseline GDP is approximately 114,631.39 million dollars. The coefficient for exports is -1.14 with a p-value of 0.222, indicating that the relationship between exports and GDP is not statistically significant. This suggests that changes in export levels did not have a statistically significant direct impact on GDP within the given period. The coefficient for imports is 3.70, with a p-value of 0.085. Although this value is above the conventional threshold of 0.05 for statistical significance, it is relatively close, suggesting that imports may have a more noticeable impact on GDP than exports. The positive coefficient indicates that an increase in imports is associated with an increase in GDP, which aligns with the idea that imports provide essential inputs for production, thereby enhancing economic growth.

The R^2 value indicates that while exports and imports are essential, they do not capture all the factors influencing Kazakhstan's GDP. Other elements, such as domestic policies, investment levels, and global economic conditions, could also play significant roles. The negative, non-significant coefficient for exports suggests that exports did not have a substantial direct impact on GDP within this period. This might be due to fluctuating global commodity prices or dependency on a narrow range of export products, primarily oil and gas. Diversifying exports and enhancing value-added products could potentially improve this relationship. Though not highly significant, the positive coefficient for imports indicates that imports benefit GDP growth. This reflects the importance of imports in providing critical goods and services that boost productivity and innovation.

For Kazakhstan, these results underline the importance of both improving export diversification and managing imports efficiently to ensure they contribute positively to the economy. Policies aimed at enhancing the quality and value of exports, as well as fostering an environment where imports can complement domestic production, are crucial. The analysis highlights the complex relationship between trade activities and economic growth. While imports show a more direct positive influence on GDP, exports require strategic enhancements to significantly impact economic growth. Future studies should incorporate additional variables and possibly more extended time frames to elucidate these dynamics further and guide effective economic policies. Reduce reliance on a narrow range of commodities by promoting other sectors such as manufacturing, agriculture, and services. This can be achieved through investment in technology, infrastructure, and education to enhance the competitiveness of various industries.

Next, in Figure 3, we present a Q-Q plot.

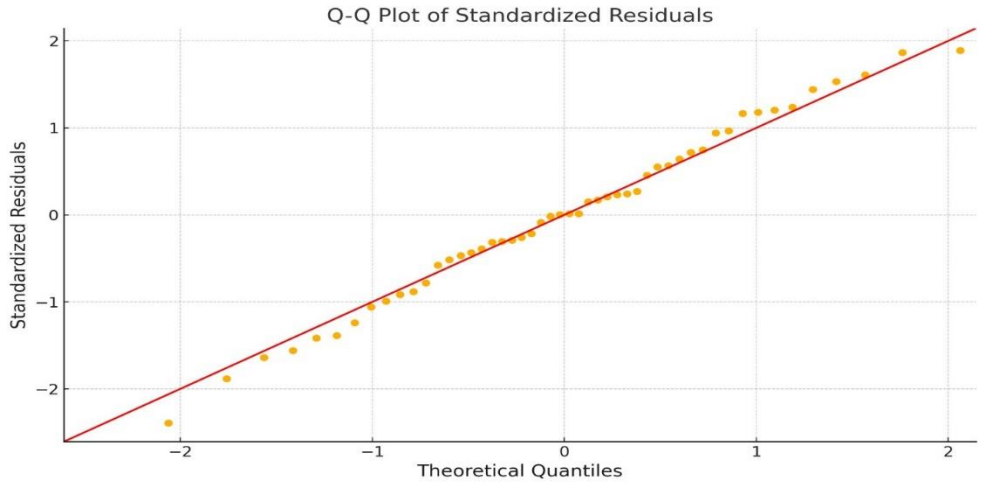

Figure 3. Q-Q plot

Note: compiled based on the calculations

The Q-Q plot displays the standardized residuals of the linear regression model plotted against their theoretical quantiles under normal distribution. The points closely align with the diagonal line, suggesting that the residuals are approximately normally distributed. This alignment indicates that the normality assumption of the linear regression model is reasonably satisfied. However, a few points deviate slightly from the line, particularly in the tails, which could hint at minor issues with outliers or non-normality in the data. Next, in Figure 4, data on exports by regions in 2022.

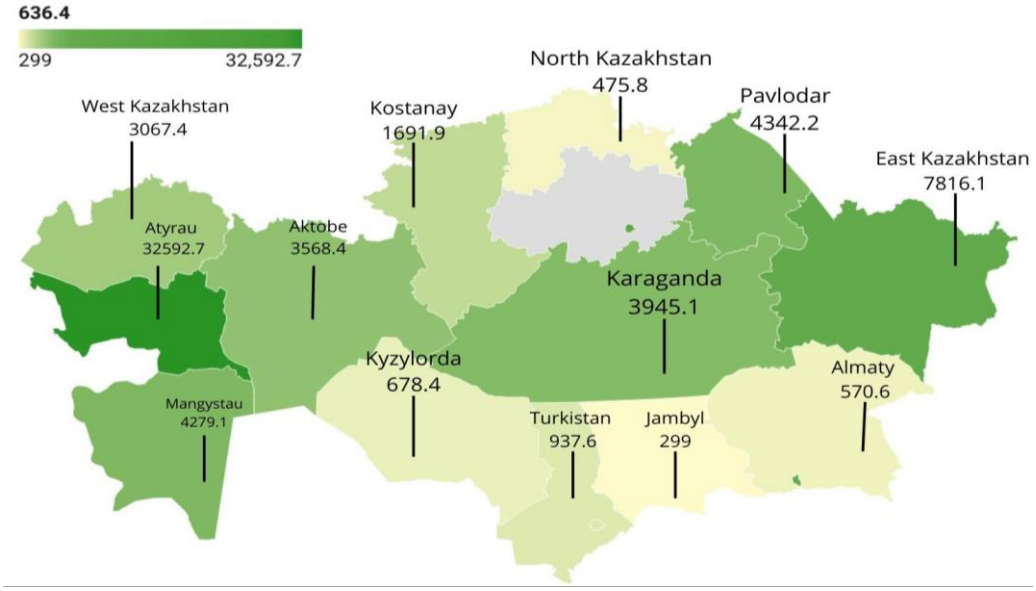

Figure 4. Exports by regions 2022

Note: compiled based on the calculations

Next, a map illustration of Kazakhstan in 2022 shows export data across critical regions of Kazakhstan, revealing notable variations and insights into regional economic dynamics. Atyrau emerges as the leading exporter by a significant margin, with a total export value of $32,592.7 million, primarily driven by its prominent oil and gas industry. East Kazakhstan follows closely behind, with exports totaling $7,816.1 million, reflecting the region's diverse industrial base, including mining and metallurgy sectors. Pavlodar and West Kazakhstan also contribute substantially to the country's exports, with values of $4,342.2 million and $3,067.4 million, respectively. Other regions, such as Aktobe, Kostanay, and Turkistan, demonstrate comparatively lower export volumes, indicating potential areas for economic development and diversification. Despite being the country's largest city and financial center, Almaty registers relatively modest export figures at $570.6 million, suggesting a greater emphasis on services and non-tradable sectors. Overall, the analysis highlights the diverse export landscape of Kazakhstan, with regions exhibiting varying levels of economic activity and specialization, thus emphasizing the importance of regional development policies tailored to specific needs and strengths.

Then, in Figure 5, data on imports by regions in 2022.

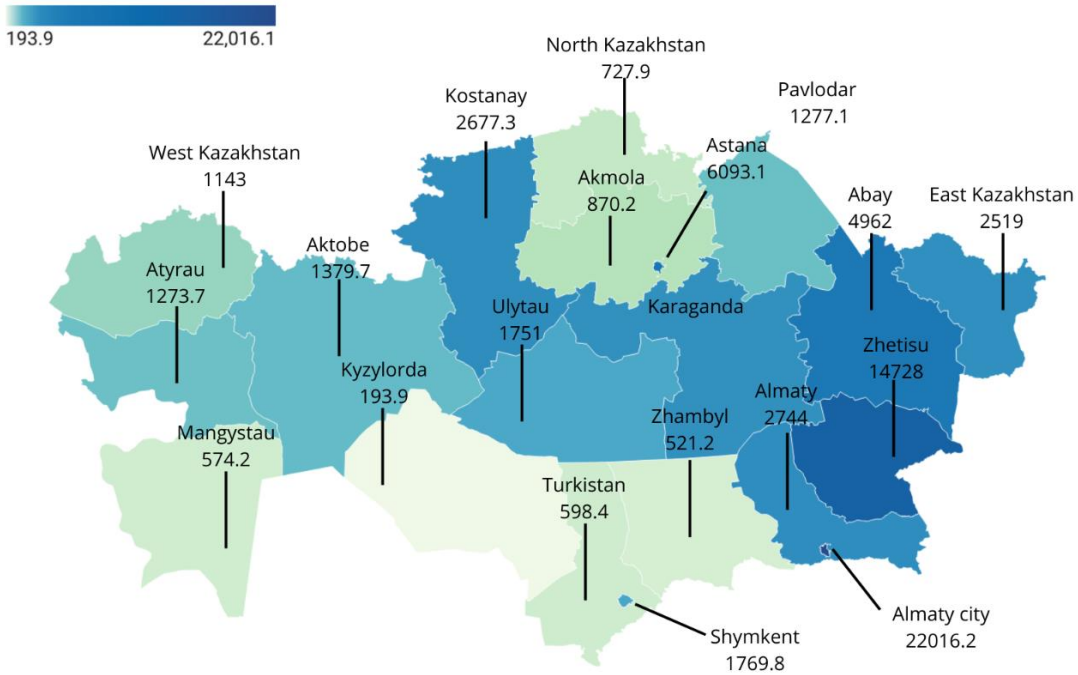

Figure 5. Imports by regions in 2022

Note: compiled based on the calculations

The map illustration shows export data across critical regions of Kazakhstan, revealing notable variations and insights into regional economic dynamics. Almaty emerges as the leading importer by a significant amount, with a total import value of $22016.2 million, driven by electricity, vehicle machines, and food products. Although relatively minor, it is followed by Zhetisu, an autonomous region of the People's Republic

of China, which is predominantly rural with $14728 million. The enterprise “Khorgos 5G” is China's most significant and unique smart logistics port in the Xinjiang Uygur Autonomous Region. This smart logistics port sends agricultural goods, machinery, and electric vehicles to Asian countries through Kazakhstan's Nur Zholy checkpoint. In addition, it imports up to 100,000 tons of meat products annually. Next, Abay, Kostanay, Karaganda, East Kazakhstan, and Almaty regions with $4962, $2677,3, $2464, $2519, and $2744 million, respectively. These regions also perform relatively well, as some border major export countries such as China and Russia. Although Atyrau and Mangystau regions are renowned for their rich oil and gas reserves, making them an important center not only for extracting these resources, imports into the region can be reduced as most of the necessary goods can be produced or extracted locally. Overall, the map illustration depicts significant variations in export data across key regions of Kazakhstan, highlighting Almaty as the foremost importer, followed by Zhetisu, an autonomous region of China, with notable economic dynamics influenced by factors such as industry specialization and geographical location.

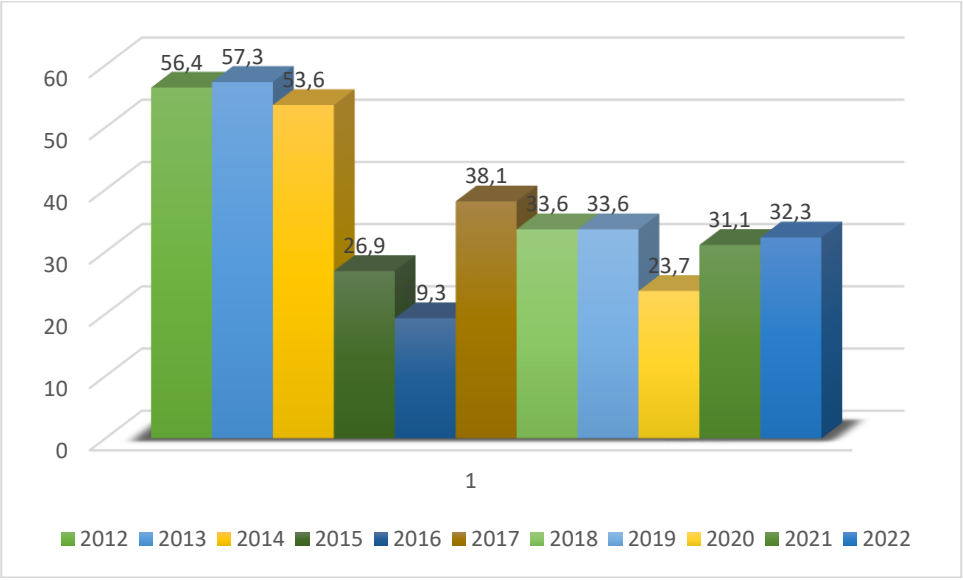

Figure 6. Dynamics of oil exports

Note: compiled based on the calculations

Oil and gas condensate provides about 60% of Kazakhstan's commodity exports. The National Fund is 99% replenished by revenues from the oil and gas sector, and the Republican budget is replenished by 30-50% by the oil and gas industry, including the amounts of export customs duties on crude oil and petroleum products. That is the reason why the income amount to the National Fund directly depends on the oil price. According to the data of oil exports, a steady rise from 2012 to 2013, with some fluctuations rising from 56.4 to 57.3 units, whereas the trend shifts drastically in 2014, checking a critical decrease to 53.6 units. This descending trajectory continues in subsequent a long time, with sharp decreases watched in 2015 and 2016, coming to 26.9 and 19.3 units,

respectively. However, a partial recuperation is clear in 2017, with volumes expanding to 38.1 units, but remaining underneath past levels. Subsequent years show stabilization around 33.6 units, with striking decays observed in 2020 due to worldwide economic challenges initiated by the COVID-19 widespread. In spite of some recovery in 2021 and 2022, trade volumes stay below the levels seen prior within the period (Figure 7).

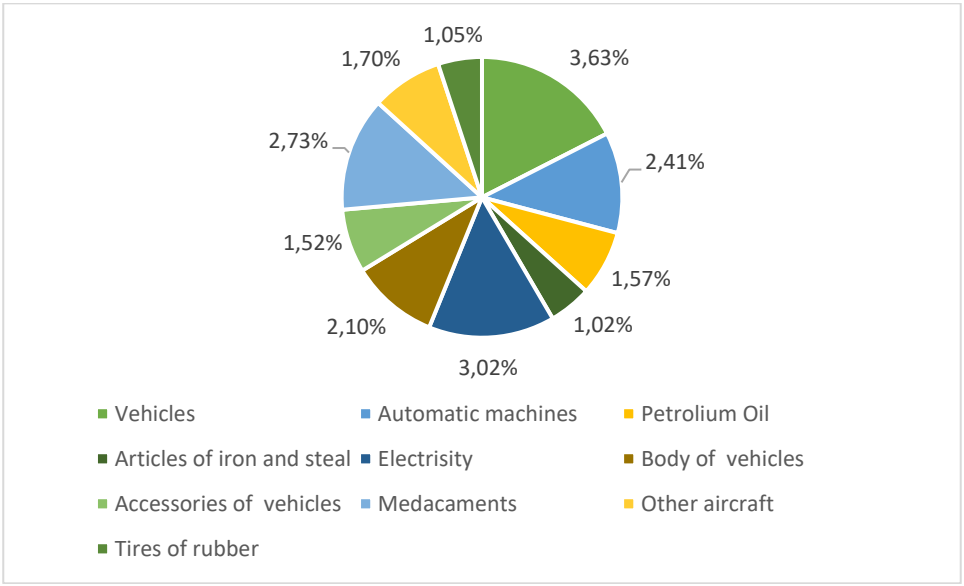

Figure 7. Top 10 imports of Kazakhstan

Note: compiled based on the calculations

The investigation of Kazakhstan's top 10 imports gives profitable insights into the country's financial scene. By analyzing imports of Kazakhstan, we can observe a difference of what we export and import. While Kazakhstan mostly exports primary natural resources such as oil and gas, vehicles overwhelm the import scene, accounting for 3.63% of add up to imports and a stunning $1.81 billion in value. This significant figure underscores the nation's dependence on imported transportation equipment for both individual and commercial utilize. Taking closely behind, power constitutes 3.02% of imports, speaking to a critical portion of the country's vitality needs, with a value of $1.51 billion. Medicaments, fundamental for healthcare arrangements, contain 2.73% of imports, totaling $1.36 billion. While, programmed machines and bodies for vehicles moreover highlight conspicuously, contributing 2.41% and 2.10% to add up to imports, separately, with values of $1.2 billion and $1.05 billion. Other striking imports incorporate other airship ($854 million), petroleum oils ($786 million), accessories for vehicles ($765 million), tires of rubber ($528 million), and articles of press or steel ($510 million). These figures emphasize the differing run of imported merchandise and the noteworthy monetary speculation required to maintain Kazakhstan's economy and meet the requirements of its people.

Conclusion

In conclusion, this research has provided valuable insights into the effect of exports and imports on the national income of Kazakhstan. Through a combination of theoretical foundations and empirical analysis, we have elucidated the intricate relationship between international trade activities and the nation's economic well-being. The empirical analysis, conducted using multiple regression analysis and correlation matrices, revealed significant findings regarding the impact of exports and imports on Kazakhstan's gross domestic product (GDP).

The results indicate that there exists a notable correlation between GDP and foreign trade turnover, with positive correlations suggesting that countries with higher GDP tend to have higher foreign trade turnover. Additionally, the examination of import and export trends over the years shed light on the dynamics of Kazakhstan's trade sector, particularly highlighting the crucial role of oil and gas exports in driving the nation's economy. The analysis of Kazakhstan's top imports further emphasized the country's economic landscape, revealing its dependence on imported goods such as vehicles, power, and medicaments. This underscores the significance of efficient trade policies and investment in domestic industries to reduce dependency on imports and bolster economic resilience.

In summary, this research contributes to the existing body of knowledge on international trade dynamics and provides policymakers and stakeholders in Kazakhstan with valuable insights to formulate effective trade strategies aimed at promoting sustainable economic growth and development. By leveraging these findings, Kazakhstan can continue to integrate into the global economy and diversify its export base, thereby enhancing its economic prosperity in the long term.

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International cooperation in insurance: experience and prospects for Kazakhstan

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Abstract

This article analyzes the impact of international cooperation in the insurance field on the economy of Kazakhstan, especially in the context of its participation in the World Trade Organization (WTO) and the Eurasian Economic Union (EAEU). Based on a systematic review of literature and data, including official documents and statistical reports, these agreements' effects on Kazakhstan's insurance market are analyzed. Particular attention is paid to the impact on the competitiveness of domestic insurers and expanding access to new markets and technologies. The article also presents both quantitative and qualitative data reflecting the impact of international experience and cooperation on the efficiency of the domestic insurance market. Quantitative indicators cover insurance companies' financial stability, including the volume of net profit, assets, equity capital, the dynamics of concluded insurance contracts, and the growth of insurance premiums and payments. Qualitative data includes analysis of technology transfer mechanisms, innovation and risk management based on international experience and best practices. Additionally, the article discusses the research results on implementing international standards, their impact on service delivery standards, and business process management in the insurance sector. Based on an analysis of successful international practices and cooperation with leading global insurance companies such as Swiss Re, Munich Re, and Allianz, the importance of exchanging experiences and best practices to stimulate innovation and improve the quality of services within the country is highlighted. Analytical conclusions about the current state and prospects for developing Kazakhstan's insurance market in the context of world trends and standards complement this data.

Keywords: insurance, international cooperation, trade, economic, competitiveness, market trends

Сақтандыру саласындағы халықаралық ынтымақтастық: Қазақстан үшін тәжірибе мен болашағы

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Түйін

Бұл мақалада сақтандыру саласындағы халықаралық ынтымақтастықтың Қазақстан экономикасына әсері, әсіресе оның Дүниежүзілік сауда ұйымына (ДСҰ) және Еуразиялық экономикалық одаққа (ЕАЭО) қатысу контекстінде талдау жасалған. Әдебиеттер мен мәліметтерді, оның ішінде ресми құжаттар мен статистикалық есептерді жүйелі шолу негізінде осы келісімдердің Қазақстанның сақтандыру нарығына әсері талданады. Отандық сақтандырушылардың бәсекеге қабілеттілігіне әсер ету және жаңа нарықтар мен технологияларға қолжетімділікті кеңейтуге ерекше назар аударылады. Сонымен қатар мақалада халықаралық тәжірибе мен ынтымақтастықтың отандық сақтандыру нарығының тиімділігіне әсерін көрсететін сандық және сапалық деректер келтірілген. Сандық көрсеткіштер сақтандыру ұйымдарының қаржылық тұрақтылығын, оның ішінде таза пайда көлемін, активтерін, меншікті капиталын, жасалған сақтандыру шарттарының серпінін, сондай-ақ сақтандыру сыйлық-ақылары мен төлемдерінің өсуін қамтиды. Сапалық деректер халықаралық тәжірибе мен озық тәжірибе негізінде технологиялар трансферті, инновация және тәуекелдерді басқару тетіктерін талдауды қамтиды. Сонымен қатар, мақалада халықаралық стандарттарды енгізу бойынша зерттеулердің нәтижелері, олардың сақтандыру секторындағы қызмет көрсету стандарттарына және бизнес-процестерді басқаруға әсері талқыланады. Табысты халықаралық тәжірибелерді талдау және Swiss Re, Munich Re және Allianz сияқты жетекші жаһандық сақтандыру компанияларымен ынтымақтастықты негізге ала отырып, ел ішінде инновацияларды ынталандыру және қызмет көрсету сапасын арттыру үшін тәжірибе мен озық тәжірибе алмасудың маңыздылығы атап өтілді. Бұл деректер әлемдік трендтер мен стандарттар контекстінде Қазақстанның сақтандыру нарығының қазіргі жағдайы мен даму перспективалары туралы аналитикалық тұжырымдармен толықтырылған.

Кілттік сөздері: сақтандыру, халықаралық ынтымақтастық, сауда, экономика, бәсекеге қабілеттілік, нарықтық үрдістер

Международное сотрудничество в сфере страхования: опыт и перспективы для Казахстана

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Аннотация

Данная статья представляет собой анализ влияния международного сотрудничества в области страхования на экономику Казахстана, особенно в контексте его участия в Всемирной торговой организации (ВТО) и Евразийском экономическом союзе (ЕАЭС). На основе систематического обзора литературы и данных, включая официальные документы и статистические отчеты, проанализированы эффекты этих соглашений на страховой рынок Казахстана. Особое внимание уделено влиянию на конкурентоспособность отечественных страховщиков и расширению доступа к новым рынкам и технологиям. Статья также представляет как количественные, так и качественные данные, отражающие влияние международного опыта и сотрудничества на эффективность отечественного страхового рынка. Количественные показатели охватывают финансовую устойчивость страховых компаний, включая объемы чистой прибыли, активов, собственного капитала, динамику заключенных договоров страхования, а также рост страховых премий и выплат. Качественные данные включают анализ механизмов технологического трансфера, инноваций и управления рисками на основе международного опыта и передовых практик. Дополнительно в статье рассматриваются результаты исследований о внедрении международных стандартов, их влияние на стандарты предоставления услуг и управление бизнес-процессами в страховом секторе. На основе анализа успешных международных практик и сотрудничества с ведущими мировыми страховыми компаниями, такими как Swiss Re, Munich Re и Allianz, выделено значение обмена опытом и передовыми практиками для стимулирования инноваций и повышения качества услуг внутри страны. Эти данные дополняются аналитическими выводами о текущем состоянии и перспективах развития страхового рынка Казахстана в контексте мировых трендов и стандартов.

Ключевые слова: страхование, международное сотрудничество, торговля, экономика, конкурентоспособность, рыночные тенденции

Introduction

Kazakhstan's accession to the WTO and participation in the EAEU expand market opportunities for Kazakh insurance companies, allowing them to compete internationally and increase the volume of premiums. Harmonizing insurance legislation with international standards improves the quality of services and increases the transparency and reliability of insurance companies. Open markets, the catalyst for innovation, increase competition in the insurance industry, encouraging improved products and services and lower prices. International cooperation and access to global markets promote the introduction of advanced technologies and innovations that improve efficiency and quality of service. Interaction with international partners strengthens the financial stability of insurance companies, increasing the confidence of clients and investors. Thus, the integration of Kazakhstan into international economic unions contributes to the growth of the insurance sector through improving the quality of services, increasing competitiveness, introducing innovation and strengthening financial stability.

Kazakhstan's accession to the WTO and participation in the EAEU expand market opportunities for Kazakh insurance companies, allowing them to compete internationally and increase the volume of premiums. Harmonizing insurance legislation with international standards improves the quality of services and increases the transparency and reliability of insurance companies. Open markets increase competition in the insurance industry, encouraging improved products and services and lower prices. International cooperation and access to global markets promote the introduction of advanced technologies and innovations that improve efficiency and quality of service. Interaction with international partners strengthens the financial stability of insurance companies, increasing the confidence of clients and investors. Thus, the integration of Kazakhstan into international economic unions contributes to the growth of the insurance sector by improving the quality of services, increasing competitiveness, introducing innovation, and strengthening financial stability.

Materials and methods

The study used various information sources, including official documents, reports of international organizations, analytical reports of consulting firms, statistical data, and interviews with insurance company representatives and experts. Analysis methods included documentary analysis, statistical analysis, case studies, qualitative methods, and comparative analysis.

Legislative and normative analysis:

The text examines how Kazakhstan's accession to the WTO and the EAEU required changes in the legislative framework to align with international standards. This includes harmonizing national laws with the legislation of the EAEU and adopting international practices, such as the components of Solvent II.

Quantitative analysis:

The text uses statistics to demonstrate market growth, such as increases in insurance contracts, assets, liabilities, and premiums. Tables show specific numbers and percentages, which indicate positive dynamics.

Impact assessment:

The text evaluates the impact of digitalization and the introduction of new technologies (e.g., online claims resolution and database integration) on operational efficiency and customer satisfaction. The implementation of Solvency II components and developing risk assessment guidelines to improve risk management practices are also discussed.

Comparative analysis:

The text provides examples of successful collaboration between Kazakh and foreign insurance companies, showing how these collaborations have contributed to the introduction of advanced technologies and improved insurance products. The role of international cooperation in Kazakh specialists' training and professional development is also analyzed.

Case stages and examples:

Partnerships with companies such as Swiss Re, Munich Re, and Allianz illustrate the practical benefits of international cooperation, such as technology transfer and improved risk management practices. These examples demonstrate how international cooperation and technology transfer contribute to the development of the Kazakhstan insurance market, improving the quality and reliability of insurance services.

Future predictions:

The text discusses plans, such as the ongoing implementation of Solvent II and future stages of legislative harmonization within the EAEU. This includes forecasts for further development and introducing new guidelines and technologies, which underscores the insurance industry's long-term development strategy.

Results

International agreements, such as Kazakhstan's accession to the WTO and participation in the EAEU, significantly impact the insurance market, contributing to its development and competitiveness. Kazakhstan's entry into the WTO in 2015 was a significant event for the national insurance market. This led to changes in the legislative framework aimed at increasing transparency and competitiveness. Participation in the WTO also opened access to international markets and helped attract foreign investors.

This event had far-reaching consequences for Kazakhstan's insurance industry, emphasizing the need to harmonize national legislation with international standards, which in turn became an incentive to modernize and improve the work of domestic insurance companies. Accession to the WTO opened access to new markets and technologies for Kazakhstani insurers, contributing to their local and international development and competitiveness [1, p. 265].

Kazakhstan's membership in the Eurasian Economic Union (EAEU) also significantly impacts the insurance market. Within the framework of this union, insurance legislation is being harmonized, which simplifies the access of Kazakhstani insurance companies to the markets of other participating countries. This creates favorable conditions for expanding the activities of companies beyond national borders and helps strengthen the position of Kazakhstan insurers in the international arena.

In addition, cooperation in the EAEU promotes the exchange of experience and best practices in insurance between participating countries. This exchange of expertise allows insurance companies in Kazakhstan to learn from the successful experience of foreign colleagues and introduce advanced technologies and risk management techniques, which helps improve the quality of services and strengthen the competitiveness of the national insurance market.

Kazakhstan has concluded several free trade agreements with various countries, significantly contributing to the insurance market's development. These agreements are crucial in creating a favorable investment and trade environment, facilitating access to insurance services for foreign companies in Kazakhstan [2, p. 1587]. Such an open market stimulates competition, which, in turn, helps improve the quality of services and innovative development of domestic insurance companies.

Discussion

International cooperation plays a key role in the modern insurance industry in Kazakhstan by stimulating innovation, improving service, and contributing to market development. However, successful adaptation of international experience requires careful analysis and adaptation to local conditions. Further development of cooperation with foreign partners will contribute to the sustainable growth of Kazakhstan's insurance market and improve its citizens' well-being.

At the current stage of development, the insurance sector of the Republic of Kazakhstan demonstrated stable development by the beginning of 2024, with 25 insurance organizations, including nine life insurance companies. In 2023, the assets of insurance and reinsurance companies increased by 20.7% to 2.5 trillion tenge, mainly due to increased income from insurance activities [3].

The largest share of assets was securities (70.2%), and liabilities increased by 23.2% to 1.6 trillion tenge, mainly due to the growth of insurance reserves. The equity capital of insurance companies increased by 16.6%, reaching 904 billion tenge, mainly due to profits from insurance activities.

The net profit of the insurance sector for 2023 amounted to 182.9 billion tenge, although in December, a loss of 5.3 billion tenge was recorded. The number of concluded insurance contracts for individuals and legal entities increased by 37.5%, and insurance premiums increased by 29.6%, especially in voluntary property insurance. The volume of insurance premiums for voluntary personal insurance increased by 28.5% and for voluntary property insurance by 38.5%. In 2023, total insurance payments increased by 43.7%, mainly due to property and life insurance [4].

Summarizing data posted in official information open sources, such as the Committee for Control and Supervision of the Financial Market and Financial Organizations of the National Bank of the Republic of Kazakhstan (NBRK), Annual reports and statistical bulletins available on the official website of the National Bank of the Republic of Kazakhstan, as well as materials published in the annual reviews of the insurance market of the Association of Financiers of Kazakhstan (AFK), we compiled Table 1, which demonstrates the growth rate of concluded insurance contracts.

Table 1 – Number of concluded insurance contracts (2022-2023)

Category	2022	2023	Change (%)
Total contracts	12,308	16,928	+37,5
Accident insurance	-	2,150	+151,5
Civil liability insurance for vehicle owners	-	738	+12,0

Note: compiled by the authors based on source [5]

The indicators in Table 1 indicate positive dynamics in the efficiency of the insurance sector and an increase in consumers' confidence in insurance services in the country. The positive dynamics in the insurance sector of Kazakhstan reflected in the growth rate of concluded insurance contracts, are closely related to digitalization processes. The introduction of online claims settlement, the integration of the Unified Insurance Database with government agencies, and the simplification of motor insurance procedures through the Europrotocol contributed to increased transparency and convenience for consumers. These measures have not only improved the operational efficiency of insurance companies but also increased customer confidence in insurance services, which in turn has had a positive impact on overall market growth.

An essential focus of this work was systematic activities to improve the risk-based supervision model in the insurance industry. The main focus is directed at aspects of behavioral ethics and control over the interaction of market participants with customers, competitors, and partners. In parallel with this, the compliance of national legislation with the principles of insurance established by international standards is being assessed. An essential element is ensuring insurance companies' financial stability through the implementation of global standards Solvency II [5].

In May 2023, as part of the technical assistance provided by the World Bank, Kazakhstan received valuable recommendations on the implementation of Solvency II components, marking a significant step towards aligning its insurance sector with international standards.

This initiative aims to enhance the regulatory framework governing the insurance industry, ensuring greater financial stability and consumer protection. The initial phase involved finalizing a detailed roadmap outlining the steps necessary for the full implementation of Solvency II. This roadmap serves as a comprehensive guide for regulatory authorities and insurance companies, detailing the sequence of actions required to achieve compliance with Solvency II standards. It addresses critical milestones and sets realistic timelines for each stage of the process.

A significant milestone in this process was the development of a draft guide for assessing insurance risks. This guide provides insurers with methodologies and best practices for identifying, evaluating, and managing the various risks associated with their operations. By adopting these guidelines, insurance companies can enhance their risk assessment capabilities, leading to more accurate pricing of insurance products and better management of their risk portfolios.

To ensure that insurers are adequately capitalized, a second test calculation was conducted to estimate the required solvency capital in accordance with Solvency II. This

test involves complex actuarial models and stress testing scenarios to determine the amount of capital necessary to cover potential losses. The results of this calculation help regulatory authorities and insurers understand the financial resilience of the sector and make necessary adjustments to capital reserves.

An important step forward was the creation of a draft manual for calculating insurance liabilities. This manual establishes a standardized approach for determining technical provisions, ensuring that insurers maintain sufficient reserves to meet future claims. It includes detailed methodologies for valuing policyholder liabilities, taking into account factors such as mortality rates, claims frequency, and policyholder behavior. The implementation process for solvency II components is reflected in Table 2.

Table 2. Implementation of Solvency II components in the Republic of Kazakhstan

Implementation stage	Description	Status
First stage	Finalization of the roadmap	Finished
Second stage	Development of risk assessment guidelines	Finished
Third stage	SCR test calculations	In progress
Development of a draft guide for calculating insurance liabilities	Planned for 2024	Planned

Note: compiled by the authors based on source [6]

The analysis of this table shows the consistent implementation of Solvency II components in Kazakhstan's insurance sector. Finalizing the roadmap and developing risk assessment guidelines have now been completed, indicating progress towards achieving Solvency II standards. SCR test calculations are in progress, indicating active implementation of the standard's requirements. It is planned to develop draft guidelines for calculating insurance liabilities in 2024, emphasizing the long-term strategy for developing the insurance industry.

Digitalization also plays a key role in the development of the insurance sector. The introduction of online services and automated systems for settling insurance claims makes it possible to improve the availability of services and increase the transparency of interaction between insurers and clients.

In 2023, as part of the large-scale digitalization of the insurance sector, a regulatory framework for the implementation of online settlement of insurance claims and simplified settlement in compulsory types of insurance was developed. This crucial step contributes to the transformation of the insurance market and responds to the challenges of the modern digital economy [6]. The online claims process has made the insurance process more accessible and convenient for end users while also improving transparency and efficiency in the entire process. The Agency also took significant steps to introduce simplified settlement of insurance claims in motor insurance using the Europrotocol mobile application [7, p.351]. These measures not only ensure fairness and transparency in the relationship between insurers and insured persons but also help increase trust in insurance companies in general.

For clarity, the comparative table (Table 3) demonstrating the impact of introduced technologies on the performance of domestic insurance companies is presented:

Table 3. Effect of introduced technologies on the performance of domestic insurance companies

Introduced technology	Example	Effect on indicators
Online settlement of insurance claims	Implementation of systems for submitting applications and documents online	Reduced application processing time, reduced operating costs, increased customer satisfaction
Integration of the Unified Insurance Database with government agencies	Automatic exchange of information with state registers	Reducing the need for manual data verification, lowering costs for administrative processes, speeding up the payment process
Simplified settlement of car insurance claims through the Europrotocol	Mobile applications for registration of road accidents on the spot without police participation	Reduced resolution time, reduced dispute resolution costs, improved customer experience
Development and use of mobile applications and digital services	Applications for filing insurance claims and tracking real-time status	Increasing the availability and convenience of insurance services, expanding the client base, reducing customer service costs

Note: compiled by the authors based on source [8]

This table demonstrates how the introduction of various technological innovations is helping improve insurance companies' performance in Kazakhstan, including reducing operating costs, improving the quality of customer service, and increasing consumer confidence in insurance services.

Thus, according to official data “Analytical Notes” of the National Bank of the Republic of Kazakhstan, domestic insurance companies have reduced customer service costs by 30% due to the use of generative Artificial Intelligence of the InsurTech platform [8].

Harmonization of legislation in the insurance sector of the EAEU member states is a multi-stage process aimed at ensuring the unity of norms and requirements governing the activities of insurance companies within the framework of a single financial market [9, p. 79]. In this regard, a Harmonization Action Plan designed for several stages has been developed and actively implemented. The first two stages have already been completed in 2020-2023, and the final stage is planned for 2024-2025.

An essential step in strengthening international cooperation in insurance supervision was the signing of a Multilateral Memorandum of Understanding between the Agency and the International Association of Insurance Supervisors (IAIS). This agreement aims to share best practices and information and increase cooperation with

regulators from other countries. An essential element of international interaction was the participation of the Agency in conferences and meetings, such as the 19th meeting of the Interstate Coordination Council of Heads of Insurance Supervisory Authorities of the CIS Member States and the XIV International Conference "Insurance in Central Asia."

Special attention is also paid to the development of the reinsurance market. In December 2023, the Agency took part in the Conference on creating the international reinsurance capacity "TURAN", which included leading insurance organizations of Kazakhstan, Uzbekistan, Azerbaijan and Georgia. Creating such a reinsurance capacity facilitates the exchange of experience and resources in the insurance field of large risks and increases financial stability at the regional level. In the future, in 2024, work is planned to be carried out to develop mechanisms for ensuring the property protection of the population in the event of catastrophic events. This includes the involvement of international experts to define the insurance model, develop a roadmap, and make the necessary legislative changes.

Thus, the implementation of measures to harmonize legislation, participation in international and national events and conferences, as well as the development of the reinsurance market are the key areas of the Agency's activities aimed at ensuring the stability and development of the insurance sector in the context of global challenges and changes in the economy and financial industry. In general, the measures taken are aimed at increasing the efficiency and reliability of the insurance sector in Kazakhstan, which contributes to the development of financial stability and confidence in the national economy.

Thanks to free trade agreements, Kazakhstan gains access to advanced technologies and experience in the insurance field provided by foreign partners. This exchange of technology and knowledge is an essential source of development for the domestic insurance industry, allowing best practices and innovative products to be adapted to local conditions and customer needs [10, p.63]. Thus, free trade agreements play a crucial role in strengthening Kazakhstan's position in the global insurance arena, contributing to developing a competitive and innovative insurance market.

Kazakhstan has concluded several free trade agreements with various countries and economic blocks, which has a significant impact on the development of the insurance market. One of the essential agreements is the Agreement on establishing the Eurasian Economic Union (EAEU) between Armenia, Belarus, Kazakhstan, Kyrgyzstan, and Russia. The EAEU provides for harmonizing legislation in various areas, including insurance, to create a single economic space. This facilitates access for Kazakhstani insurance companies to the markets of other participating countries, facilitating the expansion of their activities beyond national borders.

It is also worth noting that there are free trade agreements with countries such as China, the United States, Switzerland, and others. These agreements ensure sustainability and transparency in trade relations and facilitate the exchange of experience and best practices in the insurance industry.

Thus, these agreements provide broader access to insurance services of foreign companies on Kazakhstan's territory, stimulating the exchange of technologies and knowledge, which contributes to the development and modernization of the insurance market of Kazakhstan.

Cooperation with foreign partners allows us to introduce advanced technologies and innovative products, significantly improving the quality of services and expanding client opportunities.

Examples of successful international partnerships in the insurance sector include:

1) Halyk-Life JSC and Swiss Re: The joint venture of Halyk-Life JSC and the Swiss company Swiss Re has led to significant improvements in reinsurance. This cooperation allowed the Kazakhstani company to use international experience in risk management and optimization of insurance products. Thanks to this partnership, Halyk-Life JSC was able to implement advanced risk assessment and management techniques, which increased customer confidence and improved the company's financial performance.

2) Eurasia JSC and Munich Re: The partnership between Eurasia JSC and the German company Munich Re contributed to introducing new insurance products and technologies in Kazakhstan. Joint work on property and liability insurance products allowed the Kazakh company to significantly expand its range and improve the services' quality. This partnership also included the exchange of technology and staff training, which contributed to developing staff skills and enhanced service.

3) Kazkommerts-Polis JSC and Allianz: The creation of a joint venture between Kazkommerts-Polis JSC and the German insurer Allianz made it possible to introduce modern insurance products and management methods in Kazakhstan. This cooperation included the transfer of technology and know-how in risk management, digitalization of insurance processes, and customer service. As a result of the partnership, the Kazakh company was able to significantly improve its operational efficiency and meet the market's growing needs.

The next positive aspect was the transfer of technology and innovation. Thus, many foreign insurance companies introduce advanced technologies and innovative products into Kazakhstan [11, p.149]. This includes the use of telematics, artificial intelligence, and blockchain technologies in insurance, which increases the efficiency and reliability of insurance services:

1) Use of telematics: Nomad Insurance JSC and Generali Group. As part of cooperation with the Italian insurance company Generali Group, Nomad Insurance JSC introduced telematics devices for car insurance. These devices collect data on driver behavior on the road, which helps the insurance company more accurately assess risks and offer personalized rates to customers. As a result, customers who demonstrate a safe driving experience receive discounts on their insurance premiums, increasing customer satisfaction and loyalty.

2) Artificial intelligence (AI): Kazakhinstrakh JSC and AXA. A partnership with French insurance company AXA has introduced artificial intelligence-based systems to process insurance claims and assess damages. These AI systems automate the application processing process, reducing review time and the likelihood of errors. As a result, customers receive payments faster, which improves their experience with the insurance company.

3) Blockchain technologies: Victoria JSC and Zurich Insurance Group. Cooperation with the Swiss Zurich Insurance Group allowed Victoria JSC to implement blockchain technologies for managing insurance policies and settling claims. Blockchain ensures transparency and security of transactions, reducing the risk of fraud and

simplifying the insurance claims process. This helps to increase customer confidence and improve the insurance company's reputation.

Training and professional development is the third central area of activities optimization of participants in the domestic insurance market. International partnerships contribute to the training and professional development of Kazakhstani specialists, providing them with the opportunity to exchange experience, participate in seminars and trainings, as well as undergo internships in foreign insurance companies:

1. Exchange of experience. As part of the partnership between Eurasia JSC and the German reinsurance company Munich Re, regular exchanges of experience are organized. Specialists from Kazakhstan visit the head office of Munich Re, where they learn advanced risk assessment and claims management methods. German specialists conduct master classes and seminars in Kazakhstan, sharing their knowledge and experience.

2. Seminars and trainings. Together with Swiss Re, Halyk-Life JSC organizes regular employee seminars and trainings. These activities include training in new underwriting techniques, actuarial calculations, and risk management. Participation in such seminars allows Kazakhstani specialists to keep abreast of the latest trends and technologies in the insurance industry.

3. Internships. As part of cooperation with Allianz, employees of Kazkommerts-Polis JSC undergo internships at the head office of the German company. These internships include training in various departments, such as underwriting, claims, and risk management. Through such internships, Kazakhstani specialists gain unique experience working in an international environment and bring the acquired knowledge to their company.

These examples demonstrate how international cooperation helps improve Kazakhstani specialists' skills, ultimately improving the quality and efficiency of insurance services in the country.

These examples demonstrate how international cooperation and technology transfer contribute to the development of the insurance market in Kazakhstan, improving the quality and reliability of insurance services.

An analysis of the impact of international cooperation on Kazakhstan's insurance market requires a more in-depth consideration of various aspects. Precisely:

1. Increase in the volume of insurance premiums: According to the report of the Committee on Insurance and Financial Markets (ICFM), over the past five years, the volume of insurance premiums in Kazakhstan has increased by 37%, reaching 654.8 billion tenge in 2023 [12]. This can be partly explained by active international cooperation, which contributed to developing insurance products and expanding the customer base.

2. Improving insurance practices and technologies: Research by the Kazakhstan Financial Stability Fund has shown that introducing advanced technologies and risk management methods adopted through international cooperation has reduced insurance payments by 25% over the past three years.

3. Market expansion and increased competition: According to an analysis of data from the National Bank of the Republic of Kazakhstan, the number of foreign insurance companies that entered the Kazakh market after the start of active international

cooperation increased by 30%. This has made the market more competitive, which helps improve the quality of services and reduce insurance prices.

4. Attracting investment and infrastructure development: Data from the Agency for Regulation and Development of the Financial Market (ARFRD) shows that in recent years, the volume of investment in the insurance industry of Kazakhstan has increased by 50% due to active international cooperation. This contributed to the development of infrastructure and the introduction of innovative approaches to the work of insurance companies.

These figures and statistics confirm that international cooperation has a significant impact on Kazakhstan's insurance market, contributing to its development, competitiveness, and improvement of the quality of services. The impact of international agreements on Kazakhstan's insurance market includes the following aspects (Figure 1).

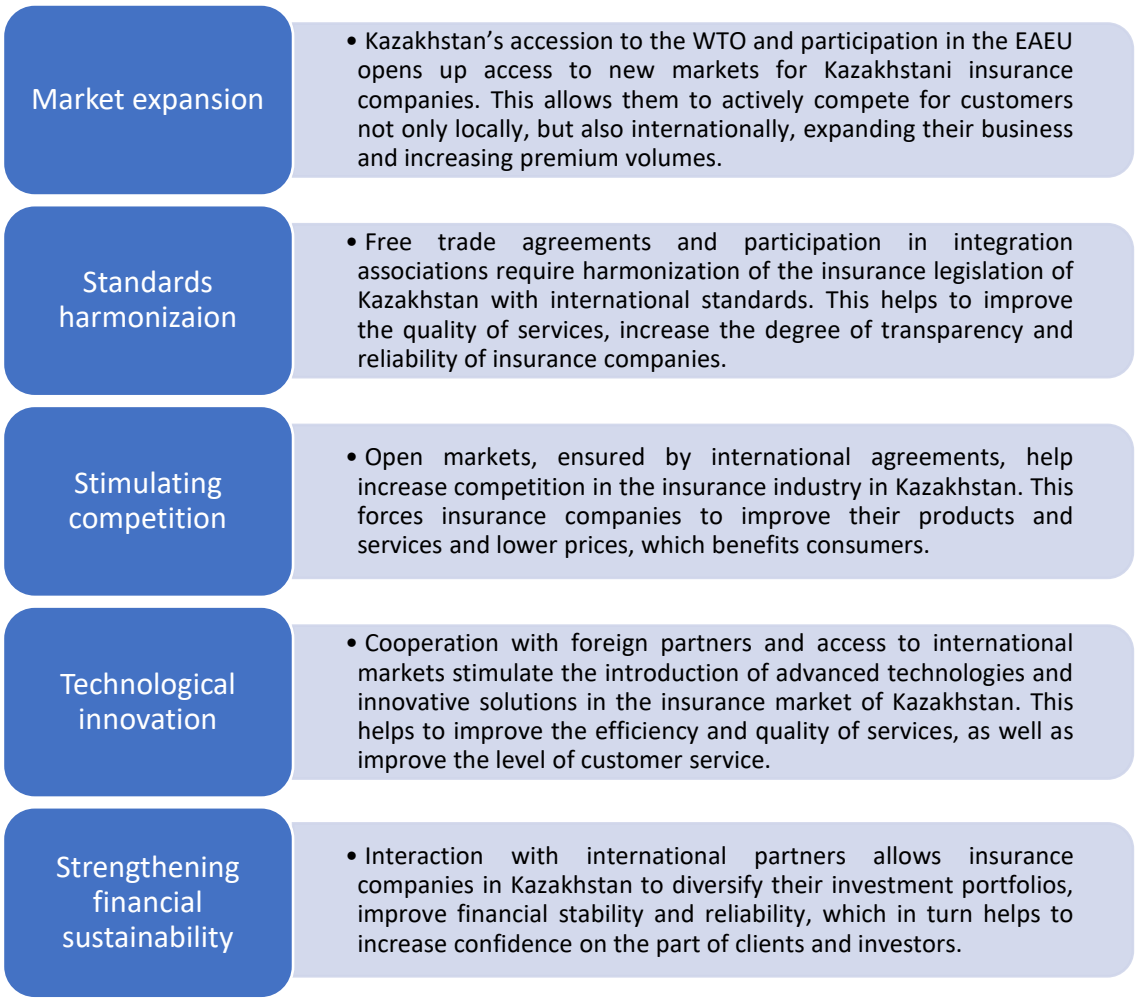

Figure 1. Results of the adoption of international agreements on the insurance market of Kazakhstan

Note: compiled by the authors

Thus, international cooperation opens up broad prospects for the Kazakh insurance industry for development and improvement, ultimately benefiting both business and society. Kazakhstan's accession to the WTO and participation in the EAEU expand market opportunities for Kazakh insurance companies, allowing them to compete internationally and increase the volume of premiums. Harmonizing insurance legislation with international standards improves the quality of services and increases the transparency and reliability of insurance companies. Open markets increase competition in the insurance industry, encouraging improved products and services and lower prices. International cooperation and access to global markets promote the introduction of advanced technologies and innovations that improve efficiency and quality of service. Interaction with international partners strengthens the financial stability of insurance companies, increasing the confidence of clients and investors. Thus, the integration of Kazakhstan into international economic unions contributes to the growth of the insurance sector by improving the quality of services, increasing competitiveness, introducing innovation, and strengthening financial stability.

Conclusions

International cooperation in the insurance sector is an integral element of developing the insurance market in Kazakhstan, especially in the context of modern challenges and demands by globalization and innovation. The country has opened up new prospects and challenges for the insurance sector by joining the World Trade Organization (WTO) and the Eurasian Economic Union (EAEU). This contributed to the harmonization of legislation, adaptation to international standards, and attraction of foreign investment, strengthening the position of domestic insurers on the world stage.

The analysis results show that international agreements, such as membership in the WTO and the EAEU, have a significant impact on the insurance market, stimulating its development and competitiveness. Accession to the WTO and cooperation within the EAEU promotes the harmonization of legislation, the exchange of experience and best practices between member countries, and creates favorable conditions for expanding the activities of insurance companies beyond national borders.

In addition, free trade agreements with various countries contribute to the development of the insurance market by providing access to advanced technologies and innovations in the insurance field. Examples of successful international partnerships demonstrate that the transfer of technology and knowledge improves the quality of services and contributes to the innovative development of the insurance market. Training and development of personnel through experience exchange, seminars, training, and internships also play an essential role in developing the insurance sector. This helps improve the qualifications of Kazakhstani specialists and brings new knowledge and experience to domestic insurance practice.

Thus, based on the above, we can conclude that international cooperation is of crucial importance for the development of the insurance market in Kazakhstan. Partnerships with foreign companies promote the transfer of technology and knowledge, improve the qualifications of personnel, and stimulate the innovative development of the

industry. Further deepening of cooperation and adaptation of international experience to local conditions will contribute to the sustainable growth of the insurance market, increasing its competitiveness and ensuring the well-being of the citizens of Kazakhstan.

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