

ISSN: 1991-3494 (Print)
ISSN: 2518-1467 (Online)

**SCIENTIFIC JOURNAL OF
PEDAGOGY AND ECONOMICS**

**№4
2026**



ISSN 2518-1467 (Online),
ISSN 1991-3494 (Print)



SCIENTIFIC JOURNAL OF PEDAGOGY AND ECONOMICS

PUBLISHED SINCE 1944

4 (422)

July – August 2026

ALMATY, 2026

EDITOR-IN-CHIEF:

ABYLKASSIMOVA Alma Yesimbekovna, Doctor of Pedagogical Sciences, Professor, Academician of Central Asian Academic Research Center, Director of the Center for the Development of Pedagogical Education, Head of the Department of Methods of Teaching Mathematics, Physics and Computer Science at Abai KazNPU (Almaty, Kazakhstan), <https://www.scopus.com/authid/detail.uri?authorId=57191275199>, <https://www.webofscience.com/wos/author/record/2076124>.

DEPUTY EDITOR-IN-CHIEF:

SEMBIEVA Lyazzat Myktybekovna, Doctor of Economics, Professor of the Eurasian National University (Astana, Kazakhstan), <https://www.scopus.com/authid/detail.uri?authorId=57194226348>, <https://www.webofscience.com/wos/author/record/38875302>.

EDITORIAL BOARD:

RICHELLE Marynowski, PhD in Education, Professor, Faculty of Education, University of Lethbridge, (Alberta, Canada), <https://www.scopus.com/authid/detail.uri?authorId=57070452800>, <https://www.webofscience.com/wos/author/record/16130920>.

SHISHOV Sergey Evgenievich, Doctor of Pedagogical Sciences, Professor, Head of the Department of Pedagogy and Psychology of Professional Education, Moscow State University of Technology and Management named after K. Razumovsky (Moscow, Russia), <https://www.scopus.com/authid/detail.uri?authorId=57191518233>, <https://www.webofscience.com/wos/author/record/2443966>.

ABILDINA Saltanat Kuatovna, Doctor of Pedagogical Sciences, Professor, Head of the Department of Pedagogy, Karaganda University named after E.A. Buketov (Karaganda, Kazakhstan), <https://www.scopus.com/authid/detail.uri?authorId=56128026400>, <https://www.webofscience.com/wos/author/record/4131549>.

RYZHAKOV Mikhail Viktorovich, Doctor of Pedagogical Sciences, Professor, Academician of the Russian Academy of Education, Editor-in-Chief of the journal "Standards and Monitoring in Education" (Moscow, Russia), <https://www.scopus.com/authid/detail.uri?authorId=6602245542>, <https://www.webofscience.com/wos/author/record/13675462>.

BULATBAEVA Kulzhanat Nurymzhanovna, Doctor of Pedagogical Sciences, Professor, Chief Researcher of the National Academy of Education named after Y. Altynsarin (Astana, Kazakhstan), <https://www.scopus.com/authid/detail.uri?authorId=57202195074>, <https://www.webofscience.com/wos/author/record/40173122>.

PETR Hájek, PhD, Unicorn University, Associate Professor, Department of Finance, (Prague, Czech Republic), <https://www.scopus.com/authid/detail.uri?authorId=35726855800>, <https://www.webofscience.com/wos/author/record/672404>.

JUMAN Jappar, Doctor of Economics, Professor, Honorary Academician of Central Asian Academic Research Center, Honored Worker of Kazakhstan, Director of the Center for International Applied Research Al-Farabi Kazakh National University (Almaty, Kazakhstan), <https://www.scopus.com/authid/detail.uri?authorId=59238481900>, <https://www.scopus.com/authid/detail.uri?authorId=56658765400>, <https://www.webofscience.com/wos/author/record/60977874>.

LUKYANENKO Irina Grigorievna, Doctor of Economics, Professor, Head of Department of the National University of Kyiv-Mohyla Academy (Kyiv, Ukraine), <https://www.scopus.com/authid/detail.uri?authorId=57189348551>, <https://www.webofscience.com/wos/author/record/939510>.

YESIMZHANOVA Saira Rafihevna, Doctor of Economics, Professor of the University of International Business (Almaty, Kazakhstan), <https://www.scopus.com/authid/detail.uri?authorId=56499485500>, <https://www.webofscience.com/wos/author/record/45951098>.

Scientific Journal of Pedagogy and Economics

ISSN 2518-1467 (Online),

ISSN 1991-3494 (Print).

Owner: «Central Asian Academic Research Center» LLP (Almaty).

The certificate of registration of a periodical printed publication in the Committee of information of the Ministry of Information and Communications of the Republic of Kazakhstan

№ KZ50VPY00121155, issued on 05.06.2025

Thematic focus: «*publication of the results of new achievements in the field of fundamental sciences*»

Periodicity: 6 times a year.

<http://www.bulletin-science.kz/index.php/en/>

© «Central Asian Academic Research CenterB» LLP, 2026



БАС РЕДАКТОР:

ӘБІЛҚАСЫМОВА Алма Есімбекқызы, педагогика ғылымдарының докторы, профессор, ҚР ҰҒА академигі, Педагогикалық білім беруді дамыту орталығының директоры, Абай атындағы ҚазҰПУ математика, физика және информатиканы оқыту әдістемесі кафедрасының меңгерушісі (Алматы, Қазақстан), <https://www.scopus.com/authid/detail.uri?authorId=57191275199>, <https://www.webofscience.com/wos/author/record/2076124>.

БАС РЕДАКТОРДЫҢ ОРЫНБАСАРЫ:

СЕМБИЕВА Ләззат Мықтыбекқызы, экономика ғылымдарының докторы, Л.Н. Гумилев атындағы Еуразия ұлттық университетінің профессоры (Астана, Қазақстан), <https://www.scopus.com/authid/detail.uri?authorId=57194226348>, <https://www.webofscience.com/wos/author/record/38875302>.

РЕДАКЦИЯ АЛҚАСЫ:

РИШЕЛЬ Мариновски, білім беру саласындағы PhD, Летбридж университеті педагогика факультетінің профессоры, (Альберта, Канада), <https://www.scopus.com/authid/detail.uri?authorId=57070452800>, <https://www.webofscience.com/wos/author/record/16130920>.

ШИШОВ Сергей Евгеньевич, педагогика ғылымдарының докторы, профессор, К. Разумовский атындағы Мәскеу мемлекеттік технологиялар және басқару университетінің кәсіби білім беру педагогикасы және психологиясы кафедрасының меңгерушісі (Мәскеу, Ресей), <https://www.scopus.com/authid/detail.uri?authorId=57191518233>, <https://www.webofscience.com/wos/author/record/2443966>.

ӘБІЛДИНА Салтанат Қуатқызы, педагогика ғылымдарының докторы, профессор, Е.А. Бөкетов атындағы Қарағанды университетінің педагогика кафедрасының меңгерушісі (Қарағанды, Қазақстан), <https://www.scopus.com/authid/detail.uri?authorId=56128026400>, <https://www.webofscience.com/wos/author/record/4131549>.

РЫЖАКОВ Михаил Викторович, педагогика ғылымдарының докторы, профессор, Ресей білім академиясының академигі, «Білім берудегі стандарттар мен мониторинг» журналының бас редакторы (Мәскеу, Ресей), <https://www.scopus.com/authid/detail.uri?authorId=6602245542>, <https://www.webofscience.com/wos/author/record/13675462>.

БОЛАТБАЕВА Күлжанат Нұрымжанқызы, педагогика ғылымдарының докторы, профессор, Ы.Алтынсарин атындағы Ұлттық білім академиясының бас ғылыми қызметкері (Астана, Қазақстан), <https://www.scopus.com/authid/detail.uri?authorId=57202195074>, <https://www.webofscience.com/wos/author/record/40173122>.

ПЕТР Хайек, PhD, Юникорн университеті, Қаржы департаментінің қауымдастырылған профессоры (Прага, Чехия), <https://www.scopus.com/authid/detail.uri?authorId=35726855800>, <https://www.webofscience.com/wos/author/record/672404>.

ЖҰМАН Жаппар, экономика ғылымдарының докторы, профессор, Қазақстанның Еңбек сіңірген қайраткері, ҚР ҰҒА құрметті академигі, әл-Фараби атындағы Қазақ ұлттық университетінің Халықаралық қолданбалы зерттеулер орталығының директоры (Алматы, Қазақстан), <https://www.scopus.com/authid/detail.uri?authorId=59238481900>; <https://www.scopus.com/authid/detail.uri?authorId=56658765400>, <https://www.webofscience.com/wos/author/record/60977874>.

ЛУКЪЯНЕНКО Ирина Григорьевна, экономика ғылымдарының докторы, профессор, «Киево-Могилянская академия» ұлттық университеті кафедрасының меңгерушісі (Киев, Украина), <https://www.scopus.com/authid/detail.uri?authorId=57189348551>, <https://www.webofscience.com/wos/author/record/939510>.

ЕСІМЖАНОВА Сайра Рафихқызы, экономика ғылымдарының докторы, Халықаралық бизнес университетінің профессоры (Алматы, Қазақстан), <https://www.scopus.com/authid/detail.uri?authorId=56499485500>, <https://www.webofscience.com/wos/author/record/45951098>.

Scientific Journal of Pedagogy and Economics

ISSN 2518-1467 (Online),

ISSN 1991-3494 (Print).

Меншіктенуші: «Орталық Азия академиялық ғылыми орталығы» ЖШС (Алматы қ.).

Қазақстан Республикасының Ақпарат және коммуникациялар министрлігінің Ақпарат комитетінде 05.06.2025 ж. берілген № **KZ50VPY00121155** мерзімдік басылым тіркеуіне қойылу туралы куәлік.

Тақырыптық бағыты: *«іргелі ғылым салалары бойынша жаңа жетістіктердің нәтижелерін жариялау»*

Мерзімділігі: жылына 6 рет.

<http://www.bulletin-science.kz/index.php/en/>

© «Орталық Азия академиялық ғылыми орталығы» ЖШС, 2026

ГЛАВНЫЙ РЕДАКТОР:

АБЫЛКАСЫМОВА Алма Есимбековна, доктор педагогических наук, профессор, академик НАН РК, директор Центра развития педагогического образования, заведующая кафедрой методики преподавания математики, физики и информатики КазНПУ им. Абая (Алматы, Казахстан), <https://www.scopus.com/authid/detail.uri?authorId=57191275199>, <https://www.webofscience.com/wos/author/record/2076124>.

ЗАМЕСТИТЕЛЬ ГЛАВНОГО РЕДАКТОРА:

СЕМБИЕВА Ляззат Мыктыбековна, доктор экономических наук, профессор Евразийского национального университета им. Л.Н. Гумилева (Астана, Казахстан), <https://www.scopus.com/authid/detail.uri?authorId=57194226348>, <https://www.webofscience.com/wos/author/record/38875302>.

РЕДАКЦИОННАЯ КОЛЛЕГИЯ:

РИШЕЛЬ Мариновски, PhD в области образования, профессор факультета педагогики Летбриджского университета, (Альберта, Канада), <https://www.scopus.com/authid/detail.uri?authorId=57070452800>, <https://www.webofscience.com/wos/author/record/16130920>.

ШИШОВ Сергей Евгеньевич, доктор педагогических наук, профессор, заведующий кафедрой педагогики и психологии профессионального образования Московского государственного университета технологий и управления имени К. Разумовского (Москва, Россия), <https://www.scopus.com/authid/detail.uri?authorId=57191518233>, <https://www.webofscience.com/wos/author/record/2443966>.

АБИЛЬДИНА Салтанат Куатовна, доктор педагогических наук, профессор, заведующая кафедрой педагогики Карагандинского университета имени Е.А. Букетова (Караганда, Казахстан), <https://www.scopus.com/authid/detail.uri?authorId=56128026400>, <https://www.webofscience.com/wos/author/record/4131549>.

РЫЖАКОВ Михаил Викторович, доктор педагогических наук, профессор, академик Российской академии образования, главный редактор журнала «Стандарты и мониторинг в образовании» (Москва, Россия), <https://www.scopus.com/authid/detail.uri?authorId=6602245542>, <https://www.webofscience.com/wos/author/record/13675462>.

БУЛАТБАЕВА Кулжанат Нурымжановна, доктор педагогических наук, профессор, главный научный сотрудник Национальной академии образования имени Ы. Алтынсарина (Астана, Казахстан), <https://www.scopus.com/authid/detail.uri?authorId=57202195074>, <https://www.webofscience.com/wos/author/record/40173122>.

ПЕТР Хайек, PhD, университет Юникорн, ассоциированный профессор Департамента финансов, (Прага, Чехия), <https://www.scopus.com/authid/detail.uri?authorId=35726855800>, <https://www.webofscience.com/wos/author/record/672404>.

ЖУМАН Жаппар, доктор экономических наук, профессор, заслуженный деятель Казахстана, почетный академик НАН РК, директор Центра Международных прикладных исследований Казахского национального университета им. аль-Фараби (Алматы, Казахстан), <https://www.scopus.com/authid/detail.uri?authorId=59238481900>; <https://www.scopus.com/authid/detail.uri?authorId=56658765400>, <https://www.webofscience.com/wos/author/record/60977874>.

ЛУКЬЯНЕНКО Ирина Григорьевна, доктор экономических наук, профессор, заведующая кафедрой Национального университета «Киево-Могилянская академия» (Киев, Украина), <https://www.scopus.com/authid/detail.uri?authorId=57189348551>, <https://www.webofscience.com/wos/author/record/939510>.

ЕСИМЖАНОВА Сайра Рафиевна, доктор экономических наук, профессор Университета международного бизнеса (Алматы, Казахстан), <https://www.scopus.com/authid/detail.uri?authorId=56499485500>, <https://www.webofscience.com/wos/author/record/45951098>.

Scientific Journal of Pedagogy and Economics

ISSN 2518-1467 (Online),

ISSN 1991-3494 (Print).

Собственник: ТОО «Центрально-азиатский академический научный центр» (г. Алматы).

Свидетельство о постановке на учет периодического печатного издания в Комитете информации Министерства информации и коммуникаций и Республики Казахстан

№ KZ50VPY00121155 выданное 05.06.2025 г.

Тематическая направленность: «публикация результатов новых достижений в области фундаментальных наук».

Периодичность: 6 раз в год.

<http://www.bulletin-science.kz/index.php/en/>

© ТОО «Центрально-азиатский академический научный центр», 2026



CONTENTS

PEDAGOGY

Abdrasilov B.S., Shinetova L.E., Bekenov N.K.

Evolution of Educational Assessment in Kazakhstan: From Unified National Testing Digitalization to a Competency-Based Model.....14

Arystanova S.A., Maimatayeva A.D., Zhandavletova R.B.

Teaching neurobiology at secondary school level: evidence from teacher observations and student reflective journals.....30

Bauyrzhan L.N., Zhylysbayeva A.N., Zhylysbayeva G.N.

Possibilities and difficulties in applying artificial intelligence for learning inorganic chemistry.....44

Beysembaeva T.Z., Almukhambetova Z.B.

Psychological and pedagogical features of self-regulation of future teachers.....64

Berdi D.K., Sarbayeva M.T., Meirbekov A.K.

Ways to develop the research competence of future chemistry teachers in the context of digital education.....82

Yessenbayeva A.M., Rakhmetova R.S.

Opportunities of modern digital technologies in the development of reading skills.....98

Jakina A.A., Abykenova D.B., Kopeev Zh.B.

Integration of artificial intelligence in education in the context of institutional barriers and entrepreneurial potential.....117

Zhalgasbekova Zh.K., Zulpkykhar Zh.E., Zhunusova D.

Telegram bot is an effective digital assistant for computer science teachers.....132

Zhekeyeva A.E., Akzholova A.T., Saduakas G.T.

The effectiveness of using digital technologies in completing tasks aimed at developing reading literacy.....151

Zhalel A., Bidoldoy A., Bazarbaeva B.

Pedagogical technologies for developing endurance considering the age-specific characteristics of football players.....166

Kerimbayeva R., Syzdykbayeva A., Iminova Yu.

Inclusive preschool education in Kazakhstan: practices of children's play adaptation according to interviews with teachers.....184

Nurbekova M.A., Moldakhanova D., Myrzakhmetova N.O.

Integration of STEM approaches into chemistry teaching in the educational process.....205

Nurbekova G.F., Serik M., Maulenova M.A.

Teaching learners methods of comprehensive big data analysis and visualization.....229

Nurgaliyeva K.E., Bakytказы T., Ferreira E.

Application of teaching practice in stem education for pre-service physics teacher preparation.....248

Orazbayeva F.Sh.

Pedagogical processes and polyparadigmatic positions in the conversational space.....271

Rakhimova M.N., Bozhig Zh., Satabaeva G.K.

Socio-ecological model as the basis of analysis of vitality and motor activity of students.....286

Rizakhodjayeva G.A.

Unlocking the potential: the educational impact of art-based technologies.....305

Sambetova R.A., Varyaev A.A., Uxikbayev Ye.Z.

Generative AI and its effect on academic performance in computer science education.....324

Torgayeva Sh.A., Nasirov A.A., Rakhimbayeva A.A.

Adaptive AI tools as digital scaffolds for EFL writing.....347

Tuyakov Y., Yessetov Y., Shuakayev M.

Developing high school students' spatial thinking through the use of digital technologies.....363

ECONOMY

Aidarov D.Kh., Taibek Zh.K., Turalina S.M.

Assessing the impact of financial risks on enterprise financial stability.....385

Amanbayeva A.A., Nurpeisova A.Z., Tolemissova D.A.

Digital transformation of regional socio-economic systems.....404

Biken W., Aitkazin Z., Aitkazina M.

Blended finance and credit guarantees of international financial institutions in Kazakhstan.....421

Juman J., Medukhanova L.A., Seriyeva Zh.A.

Trade and investment cooperation between Kazakhstan and Central Asian countries.....435

Kazhyken M.

A methodological framework for measuring national economic adaptivity and adaptation.....451

Kireyeva A., Rab Nawaz Lodhi, Bekbossinova A.S.

Determinants and strategic directions for enhancing women's access to quality employment in Kazakhstan.....468

Kokenova A.T., Moldabekov B., Koptayeva G.P.

Modeling of the power of cooperatives for the organizational and economic mechanism of sustainable development of the living system of the Turkestan Region.....490

Kulanova D.A., Seisenbayeva Zh.M., Kydyrova Zh.Sh.

Innovative infrastructure of light industry: integration of financial instruments and structural transformations.....517

Nurgaliyeva K., Bissenbayeva S., Zhumaxanova K.

Social entrepreneurship in Kazakhstan: current state, support mechanisms and development directions.....550

Omarkozhayeva A.N., Abikayeva M.D., Yardyakova I.V.

Tourism as a factor enhancing the socio-economic resilience of Kazakhstan's monotowns.....569

Rustemuly M., Sikhimbayeva D.R., Sikhimbayev M.R.

Payments for subsoil use and economic evaluation of mineral resources.....590

Shalbolova U.Zh., Salykov A.M., Junusova A.T.

Assessment of the effectiveness of an investment project in housing construction with consideration of digital transformation.....605

Skakova S.N., Davletova M.T., Gerasimenko V.V.

The impact of digital marketing on consumer behavior in domestic tourism in Kazakhstan.....626

Tazhikenova S.K., Zayakina A.V., Bulakbay Zh.M.

Economic assessment of Kazakhstan's residential real estate market: trends, regional differences and development factors.....654

Tekenova A., Yerzhanov A., Zharylkasinova M.

Internal control of commodity transactions in trade under digital transformation.....683

Tuzubekova M.K., Zhumagulova A.K., Baimbetov M.K.

Assessment of the investment attractiveness of the agro-industrial complex of the Republic of Kazakhstan: a regional comparative analysis.....702

Yerimpasheva A.T., Tarakbaeva R.Ye., Myrzakhmetova A.M.

Digitalization and artificial intelligence in the economy: theoretical foundations, legal regulation, and competency development.....721

Zagidullina Z.R., Ismailova R.A., Tolon M.

The role of special economic zones in shaping Kazakhstan's state export policy.....738

Zhumabekov A., Osmanov Zh., Zubecs A.

Transformation of mechanisms of state support for entrepreneurship in the Republic of Kazakhstan.....753

Zhussupova Zh.K., Duiskenova R.Zh., Baybolova L.K.

Integration of digital technologies and environmentally sustainable practices in the hotel industry: a systematic literature review.....775

МАЗМҰНЫ

ПЕДАГОГИКА

Абдрасилов Б.С., Шинетова Л.Е., Бекенов Н.К.

Қазақстанның бағалау жүйесінің эволюциясы: Ұлттық бірыңғай тестілеуді цифрландырудан құзыреттілік моделіне өту.....14

Арыстанова С.А., Майматаева А.Д., Жандавлетова Р.Б.

Орта мектеп деңгейінде нейробиологияны оқыту: мұғалім бақылаулары мен оқушылардың рефлексивтік күнделіктерінен алынған дәлелдер.....30

Бауыржан Л.Н., Жылысбаева А.Н., Жылысбаева Г.Н.

Бейорганикалық химияны оқытуда жасанды интеллектті қолданудың мүмкіндіктері мен қиыншылықтары.....44

Бейсембаева Т.Ж., Альмухамбетова Ж.Б.

Болашақ педагогтардың өзін-өзі реттеуінің психологиялық-педагогикалық ерекшеліктері.....64

Берді Д.К., Сарбаева М.Т., Мейірбеков А.К.

Цифрлық білім беру жағдайында болашақ химия мұғалімдерінің зерттеушілік құзыреттілігін дамыту жолдары.....82

Есенбаева А.М., Қойшигулова Д.М.

Оқу дағдыларын дамытудағы заманауи цифрлық технологиялардың мүмкіндіктері.....98

Джакина А.А., Абыкенова Д.Б., Копеев Ж.Б.

Институционалдық кедергілер мен кәсіпкерлік әлеует контекстінде білім берудегі жасанды интеллекттің интеграциясы.....117

Жалғасбекова Ж.К., Зулпыхар Ж.Е., Жунусова Д.Ж.

Telegram-бот – информатика мұғалімінің тиімді цифрлық көмекшісі.....132

Жекеева А.Е., Ақжолова А.Т., Садуақас Г.Т.

Оқу сауаттылығын қалыптастыруға арналған тапсырмаларды орындауда цифрлық технологияны қолданудың тиімділігі.....151

Жалел А., Бидолдой А., Базарбаева Б.

Футболшылардың жас ерекшеліктерін ескере отырып төзімділікті қалыптастырудың педагогикалық технологиялары.....166

Керимбаева Р.К., Сыздықбаева А.Д., Иминова Ю.Б.

Қазақстандағы инклюзивті мектепке дейінгі білім беру: педагогтармен сұхбат деректері бойынша балаларды ойынға бейімдеу практикасы.....184

Нурбекова М.А., Молдаханова Д., Мырзахметова Н.О.

Білім берудегі химияны оқытуда STEM тәсілдерін интеграциялау.....205

Нурбекова Г.Ф., Серік М., Мауленова М.А.

Білім алушыларды үлкен деректерді кешенді талдау және визуализациялау әдістеріне үйрету.....229

Нұрғалиева Қ.Е., Бақытқазы Т., Феррейра Э.

Болашақ физика мұғалімдерін даярлауда STEM білім беру жағдайында оқыту
тәжірибесін қолдану.....248

Оразбаева Ф.Ш.

Сөйлесім кеңістігіндегі педагогикалық үрдістер мен полипарадигмалық ұстанымдар.....271

Рахимова М.Н., Бөжиг Ж., Сатабаева Г.К.

Студенттердің тіршілік қабілеттілігі мен қозғалыс белсенділігін талдаудың негізі
ретіндегі әлеуметтік-экологиялық модель.....286

Ризаходжаева Г.А.

Мүмкіндіктерді ашу: арт-технологиялардың білім берудегі әсері.....305

Самбетова Р.А., Верьяев А.А., Уксикбаев Е.З.

Генеративтік жасанды интеллект және оның информатиканы оқытуда әсері.....324

Торғаева Ш.А., Насиров А.А., Рахимбаева А.А.

EFL жазуын оқытудағы цифрлық тірек ретіндегі бейімделгіш жасанды интеллект
құралдары.....347

Тұяқов Е., Есетов Е., Шуақиев М.

Цифрлық технологияларды пайдалану негізінде жоғары сынып оқушыларының
кеңістіктік ойлауын дамыту.....363

ЭКОНОМИКА**Айдаров Д.Х., Тайбек Ж.Қ., Туралина С.М.**

Қаржылық тәуекелдердің кәсіпорындардың қаржылық тұрақтылығына әсерін бағала.....385

Аманбаева А.А., Нурпейсова А.З., Толемисова Д.А.

Аймақтық әлеуметтік-экономикалық жүйелердің цифрлық трансформациясы.....404

Бикен В., Айтқазин Ж., Айтқазина М.

Қазақстандағы халықаралық қаржы ұйымдарының аралас қаржыландыруы және
кредиттік кепілдіктері.....421

Жұман Ж., Медуханова Л.А., Сериева Ж.А.

Қазақстан мен Орталық Азия елдерінің сауда-инвестициялық ынтымастығы.....435

Қажыкен М.

Ұлттық экономиканың бейімділігі мен бейімделуін өлшеудің әдіснамалық тәсілі.....451

Киреева А., Лодхи Р.Н., Бекбосинова А.С.

Қазақстанда әйелдердің сапалы жұмыспен қамтылуына қолжетімділікті кеңейтудің
детерминанттары мен стратегиялық бағыттары.....468

Көкенова А.Т., Молдабеков Б.К., Коптаева Г.П.

Түркістан облысының мал шаруашылығы жүйелерін тұрақты дамытудың
ұйымдастырушылық-экономикалық тетігіне кооперативтік шаруашылықтардың
әсерін модельдеу.....490

Қуланова Д.А., Сейсенбаева Ж.М., Кыдырова Ж.Ш.

Жеңіл өнеркәсіптің инновациялық инфрақұрылымы: қаржы құралдарының интеграциясы және құрылымдық қайта құру.....517

Нұрғалиева К., Бисенбаева С., Жұмаксанова К.

Қазақстандағы әлеуметтік кәсіпкерлік: қазіргі жағдайы, қолдау тетіктері және даму бағыттары.....550

Омаркожаева А.Н., Абикаева М.Д., Ярдякова И.В.

Туризм Қазақстан моноқалаларының әлеуметтік-экономикалық тұрақтылығын арттыру факторы ретінде.....569

Рүстемұлы М., Сихимбаева Д.Р., Сихимбаев М.Р.

Жер қойнауын пайдаланғаны үшін төлемдер және минералды-шикізат ресурстарын экономикалық бағалау.....590

Шалболова У.Ж., Салыков А.М., Джунусова А.Т.

Цифрлық трансформацияны ескере отырып тұрғын үй құрылысындағы инвестициялық жобаның тиімділігін бағалау.....605

Скакова С.Н., Давлетова М.Т., Герасименко В.В.

Қазақстандағы ішкі туризм саласында цифрлық маркетингтің тұтынушылардың мінез-құлқына әсері.....626

Тәжікенова С.К., Заякина А.В., Бұлақбай Ж.М.

Қазақстанның тұрғын жылжымайтын мүлік нарығын экономикалық бағалау: үрдістер, өңірлік айырмашылықтар және даму факторлары.....654

Текенова А.У., Ержанов А.Қ., Жарылқасинова М.Ж.

Саудадағы тауарлық операцияларды ішкі бақылаудың цифрлық трансформация жағдайындағы ерекшеліктері.....683

Түзубекова М.К., Жұмағұлова А.К., Баимбетов М.К.

Қазақстан Республикасы агроөнеркәсіптік кешенінің инвестициялық тартымдылығын бағалау: өңірлік салыстырмалы талдау.....702

Еримпашева А.Т., Таракбаева Р.Е., Мырзахметова А.М.

Экономикадағы цифрландыру және жасанды интеллект: теориялық негіздері, құқықтық реттеу және құзыреттіліктерді дамыту.....721

Загидуллина З.Р., Исманлова Р.А., Толон М.

Қазақстанның мемлекеттік экспорттық саясатын қалыптастырудағы арнайы экономикалық аймақтардың рөлі.....738

Жұмабеков А., Османов Ж., Зубец А.

Қазақстан Республикасында кәсіпкерлікті мемлекеттік қолдау механизмдерінің трансформациясы.....753

Жусупова Ж.К., Дүйсеннова Р.Ж., Байболова Л.К.

Қонақ үй индустриясында цифрлық технологиялар мен экологиялық тұрақты тәжірибелерді интеграциялау: жүйелі әдебиеттерге шолу.....775

СОДЕРЖАНИЕ

ПЕДАГОГИКА

Абдрасилов Б.С., Шинетова Л.Е., Бекенов Н.К.

Эволюция системы оценивания в Казахстане: от цифровизации Единого национального тестирования к компетентностной модели.....14

Арыстанова С.А., Майматаева А.Д., Жандавлетова Р.Б.

Преподавание нейробиологии на уровне средней школы: данные наблюдений учителей и рефлексивных дневников учащихся.....30

Бауыржан Л.Н., Жылысбаева А.Н., Жылысбаева Г.Н.

Перспективы и трудности использования искусственного интеллекта в изучении неорганической химии.....44

Бейсембаева Т.Ж., Альмухамбетова Ж.Б.

Психолого-педагогические особенности саморегуляции будущих педагогов.....64

Берди Д.К., Сарбаева М.Т., Мейрбеков А.К.

Пути развития исследовательских компетенций будущих учителей химии в условиях цифрового образования.....82

Есенбаева А.М., Койшигулова Д.М.

Возможности современных цифровых технологий в развитии навыков чтения.....98

Джакина А.А., Абыкенова Д.Б., Копеев Ж.Б.

Интеграция искусственного интеллекта в образовании в контексте институциональных барьеров и предпринимательского потенциала.....117

Жалгасбекова Ж.К., Зулпыхар Ж.Е., Жунусова Д.Ж.

Telegram-бот — эффективный цифровой помощник учителя информатики.....132

Жекеева А.Е., Акжолова А.Т., Садуакас Г.Т.

Эффективность использования цифровых технологий при выполнении заданий, направленных на формирование читательской грамотности.....151

Жалел А., Бидолдой А., Базарбаева Б.

Педагогические технологии формирования выносливости с учетом возрастных особенностей футболистов.....166

Керимбаева Р.К., Сыздыкбаева А.Д., Иминова Ю.Б.

Инклюзивное дошкольное образование в Казахстане: практики игровой адаптации детей по данным интервью с педагогами.....184

Нурбекова М.А., Молдаханова Д., Мырзахметова Н.О.

Интеграция STEM-подходов в преподавание химии в образовательном процессе.....205

Нурбекова Г.Ф., Серік М., Мауленова М.А.

Обучение студентов методам комплексного анализа и визуализации больших данных.....229

Нұргалиева Қ.Е., Бакытказы Т., Феррейра Э.П.

Применение практики обучения в условиях STEM-образования при подготовке будущих учителей физики.....248

Оразбаева Ф.Ш.

Педагогические процессы и полипарадигматические позиции в диалоговом пространстве.....271

Рахимова М.Н., Бөжиг Ж., Сатабаева Г.К.

Социально-экологическая модель как основа анализа жизнеспособности и двигательной активности студентов.....286

Ризаходжаева Г.А.

Раскрытие потенциала: анализ образовательного воздействия арт-технологий.....305

Самбетова Р.А., Верьяев А.А., Уксикбаев Е.З.

Генеративный искусственный интеллект и его влияние на успеваемость в образовании в области информатики.....324

Торгаева Ш.А., Насиров А.А., Рахимбаева А.А.

Адаптивные инструменты ИИ как цифровые опоры в обучении англоязычному письму.....347

Туяков Е., Есетов Е., Шуакаев М.

Развитие пространственного мышления учащихся старших классов на основе использования цифровых технологий.....363

ЭКОНОМИКА**Айдаров Д.Х., Тайбек Ж.К., Туралина С.М.**

Оценка влияния финансовых рисков на финансовую устойчивость предприятий.....385

Аманбаева А.А., Нурпейсова А.З., Толемисова Д.А.

Цифровая трансформация региональных социально-экономических систем.....404

Бикен В., Айтказин Ж., Айтказина М.

Бленд-финансирование и кредитные гарантии международных финансовых организаций в Казахстане.....421

Жуман Ж., Медуханова Л.А., Сериева Ж.А.

Торгово-инвестиционное сотрудничество Казахстана со странами Центральной Азии.....435

Кажыкен М.

Методологический подход к измерению адаптивности и адаптации национальной экономики.....451

Киреева А., Лодхи Р.Н., Бекбосинова А.С.

Детерминанты и стратегические направления расширения доступа женщин к качественной занятости в Казахстане.....468

Кокенова А.Т., Молдабеков Б.К., Коптаева Г.П.

Моделирование воздействия кооперативных хозяйств на организационно-экономический механизм устойчивого развития животноводческих систем Туркестанской области.....490

Куланова Д.А., Сейсенбаева Ж.М., Кыдырова Ж.Ш.

Инновационная инфраструктура легкой промышленности: интеграция финансовых инструментов и структурные преобразования.....517

Нургалиева К., Бисенбаева С., Жумаханова К.

Социальное предпринимательство в Казахстане: современное состояние, механизмы поддержки и направления развития.....550

Омаркожаева А.Н., Абибаева М.Д., Ярдякова И.В.

Туризм как фактор повышения социально-экономической устойчивости моногородов Казахстана.....569

Рустемұлы М., Сихимбаева Д.Р., Сихимбаев М.Р.

Платежи за недропользование и экономическая оценка минерально-сырьевых ресурсов.....590

Шалболова У.Ж., Салыков А.М., Джунусова А.Т.

Оценка эффективности инвестиционного проекта в жилищном строительстве с учетом цифровой трансформации.....605

Скакова С.Н., Давлетова М.Т., Герасименко В.В.

Влияние цифрового маркетинга на поведение потребителей во внутреннем туризме в Казахстане.....626

Тажикенова С.К., Заякина А.В., Булакбай Ж.М.

Экономическая оценка рынка жилой недвижимости Казахстана: тенденции, региональные различия и факторы развития.....654

Текенова А.У., Ержанов А.К., Жарылкасинова М.Ж.

Внутренний контроль товарных операций в торговле в условиях цифровой трансформации.....683

Тузубекова М.К., Жумагулова А.К., Баимбетов М.К.

Оценка инвестиционной привлекательности агропромышленного комплекса Республики Казахстан: региональный сравнительный анализ.....702

Еримпашева А.Т., Таракбаева Р.Е., Мырзахметова А.М.

Цифровизация и искусственный интеллект в экономике: теоретические основы, правовое регулирование и развитие компетенций.....721

Загидуллина З.Р., Исмаилова Р.А., Толон М.

Роль специальных экономических зон в формировании государственной экспортной политики Казахстана.....738

Жумабеков А., Османов Ж., Зубец А.

Трансформация механизмов государственной поддержки предпринимательства в Республике Казахстан.....753

Жусупова Ж.К., Дүйсенова Р.Ж., Байболова Л.К.

Интеграция цифровых технологий и экологически устойчивых практик в гостиничной индустрии: систематический обзор литературы.....775

SCIENTIFIC JOURNAL OF PEDAGOGY AND ECONOMICS

ISSN 1991-3494

Volume 4.

Number 422 (2026), 435-450

<https://doi.org/10.32014/2026.2518-1467.1257>

IRSTI 06.51.51

UDC 339.92

© **Juman J., Medukhanova L.A., Seriyeva Zh.A. *, 2026.**

Al-Farabi Kazakh National University, Almaty, Kazakhstan.

E-mail: name.zhanar@mail.ru

TRADE AND INVESTMENT COOPERATION BETWEEN KAZAKHSTAN AND CENTRAL ASIAN COUNTRIES

Juman Jappar — Honoured Worker of the Republic of Kazakhstan, Honorary Academician of the National Academy of Sciences of the Republic of Kazakhstan, Doctor of Economics, Professor, Al-Farabi Kazakh National University, Almaty, Kazakhstan,

E-mail: sad171@mail.ru, <https://orcid.org/0009-0005-5925-6603>;

Medukhanova Lyazipa — Candidate of Economic Sciences, Al-Farabi Kazakh National University, Almaty, Kazakhstan,

E-mail: medukhanova.l@gmail.com, ORCID iD: <https://orcid.org/0000-0001-9073-3053>;

Seriyeva Zhanara — PhD student, Al-Farabi Kazakh National University, Almaty, Kazakhstan,

E-mail: name.zhanar@mail.ru, ORCID iD: <https://orcid.org/0000-0003-1582-2587>.

Abstract. The article analyses trade and investment relations between Kazakhstan and the Central Asian countries. The study aims to conduct a comprehensive analysis and assessment of the current state of economic cooperation between Kazakhstan and the countries of Central Asia, identify and scientifically analyse the main factors, and explore opportunities to develop economic cooperation in the region. The tasks were carried out using methods that included comparative statistical analysis, graphical methods, and the calculation of correlation and regression coefficients. The analysis revealed a moderate positive correlation between Kazakhstan's GDP and that of the other Central Asian countries, indicating a very close economic interconnection. The study highlights the importance of Kazakhstan's foreign trade turnover with Central Asian countries. The issues related to trade turnover between the countries are examined, with an emphasis on the influence of global and regional economic factors. Kazakhstan maintains stable and growing trade with Uzbekistan and Kyrgyzstan, while economic ties with Tajikistan and Turkmenistan remain relatively weak but are gradually strengthening. Kazakhstan's investments in Central Asia also play an important role in shaping bilateral cooperation. The analysis shows that investment relations between Kazakhstan and the Central Asian countries are developing at a new pace.

However, the main investors are large foreign states. In the future, Kazakhstan has great opportunities to develop investment cooperation with Central Asian countries. To this end, political and economic instability in the region, as well as certain internal problems in the countries, may create favourable conditions for an influx of direct investment by eliminating the weak legal framework and the unacceptable level of corruption.

Keywords: Kazakhstan, Central Asia, cooperation, trade turnover, investment, analysis

For citations: Juman J., Medukhanova L.A., Seriyeva Zh.A. Trade and investment cooperation between Kazakhstan and Central Asian countries. Scientific Journal of Pedagogy and Economics, 2026. — No. 3. — P. 435-450. DOI: <https://doi.org/10.32014/2026.2518-1467.1257>.

© Жұман Ж., Медуханова Л.А., Сериева Ж.А.*, 2026.

Әл-Фараби атындағы Қазақ Ұлттық университеті, Алматы, Қазақстан.

E-mail: name.zhanar@mail.ru

ҚАЗАҚСТАН МЕН ОРТАЛЫҚ АЗИЯ ЕЛДЕРІНІҢ САУДА-ИНВЕСТИЦИЯЛЫҚ ҰНТЫМАСТЫҒЫ

Жұман Жаппар — Қазақстан Республикасының Еңбек сіңірген қайраткері, ҚР ҰҒА құрметті академигі, экономика ғылымдарының докторы, профессор, әл-Фараби атындағы Қазақ Ұлттық университеті, Алматы, Қазақстан,

E-mail: sad171@mail.ru, <https://orcid.org/0009-0005-5925-6603>;

Медуханова Лязипа — экономика ғылымдарының кандидаты, әл-Фараби атындағы Қазақ Ұлттық университеті, Алматы, Қазақстан,

E-mail: medukhanova.l@gmail.com, ORCID iD: <https://orcid.org/0000-0001-9073-3053>;

Сериева Жанара — докторант, әл-Фараби атындағы Қазақ Ұлттық университеті, Алматы, Қазақстан,

E-mail: name.zhanar@mail.ru, ORCID iD: <https://orcid.org/0000-0003-1582-2587>.

Аннотация. Мақалада Қазақстан мен Орталық Азия елдерінің арасындағы сауда-инвестициялық қатынастарды талдау жүргізілді. Зерттеудің мақсаты Қазақстанның Орталық Азия елдерімен экономикалық ынтымақтастығының қазіргі жағдайын кешенді талдау және бағалау, аймақтағы экономикалық ынтымақтастықтың динамикасы мен даму мүмкіндіктерін айқындайтын негізгі факторларды ғылыми негізде анықтау және саралау. Міндеттер салыстырмалы статистикалық талдау, графикалық әдіс, корреляциялық коэффициенттерді және регрессияны есептеуді қамтитын әдістерді пайдалану арқылы жүргізілді. Жасалған талдау Қазақстан мен Орталық Азия елдерінің ЖІӨ арасындағы қалыпты оң корреляцияны және экономикалық байланысының өте тығыздығын көрсетті. Зерттеу Қазақстанның Орталық Азиямен сыртқы сауда айналымының маңыздылығын көрсетеді. Елдер

арасындағы тауар айналымы жаһандық және аймақтық экономикалық факторлардың әсерін көрсететін мәселелерді анықтады. Қазақстан мен Өзбекстан, келесі Қырғызстан арасындағы сауда тұрақты және даму үстінде болып қала берсе, Тәжікстан мен Түрікменстан сияқты аймақтың басқа елдері әлсіз сауда байланыстарын, дегенмен өсіп келе жатқанын көрсетті. Қазақстанның Орталық Азиядағы инвестициялық қызметі екіжақты қатынастарда да маңызды рөл атқарады. Талдау көрсеткендей, Қазақстан мен Орталық Азия елдері арасындағы инвестициялық қатынастары жаңадан дамып келе жатыр. Дегенмен негізгі инвесторлары сыртқы үлкен мемлекеттер болып отыр. Алдағы уақытта экономикалық байланыстардың кеңеюімен Қазақстанның Орталық Азия елдерімен инвестициялық ынтымақтастықты дамыту мүмкіндігі үлкен. Ол үшін, аймақтағы саяси және экономикалық тұрақсыздық, сондай-ақ елдердегі нақты ішкі проблемалар, құқықтық базаның әлсіздігін жою арқылы инвестициялардың келуіне мүмкіндік береді.

Түйін сөздер: Қазақстан, Орталық Азия, ынтымақтастық, сауда айналымы, инвестиция, талдау

© Жуман Ж., Медуханова Л.А., Сериева Ж.А.*, 2026.

Казахский национальный университет им. аль-Фараби, Алматы, Казахстан.

E-mail: name.zhanar@mail.ru

ТОРГОВО-ИНВЕСТИЦИОННОЕ СОТРУДНИЧЕСТВО КАЗАХСТАНА СО СТРАНАМИ ЦЕНТРАЛЬНОЙ АЗИИ

Жуман Жаппар — заслуженный деятель Республики Казахстан, почетный академик Национальной академии наук Республики Казахстан, доктор экономических наук, профессор, Казахский национальный университет им. аль-Фараби, Алматы, Казахстан,
E-mail: sad171@mail.ru, [https:// orcid.org/0009-0005-5925-6603](https://orcid.org/0009-0005-5925-6603);

Медуханова Лязипа — кандидат экономических наук, Казахский национальный университет им. аль-Фараби, Алматы, Казахстан,

E-mail: medukhanova.l@gmail.com, ORCID iD: <https://orcid.org/0000-0001-9073-3053>;

Сериева Жанара — докторант, Казахский национальный университет им. аль-Фараби, Алматы, Казахстан,

E-mail: name.zhanar@mail.ru, ORCID iD: <https://orcid.org/0000-0003-1582-2587>.

Аннотация. В статье анализируются торговые и инвестиционные отношения между Казахстаном и странами Центральной Азии. Целью исследования является проведение комплексного анализа и оценки современного состояния экономического сотрудничества Казахстана и стран Центральной Азии, выявление и анализ на научной основе основных факторов, возможности развития экономического сотрудничества в регионе. Задачи выполнялись с использованием методов, включающих сравнительный статистический анализ, графические методы, расчет коэффициентов корреляции и регрессии. Анализ показал умеренную положительную

корреляцию между ВВП Казахстана и стран Центральной Азии и весьма тесную экономическую взаимосвязь. Исследование показывает важность внешнеторгового оборота Казахстана со странами Центральной Азии. Раскрыты вопросы товарооборота между странами, которые отражают влияние глобальных и региональных экономических факторов. Казахстан поддерживает устойчивую и развивающуюся торговлю с Узбекистаном и Кыргызстаном, в то время как экономические связи с Таджикистаном и Туркменистаном остаются относительно слабыми, но постепенно усиливаются. Инвестиции Казахстана в Центральную Азию также играют важную роль в формировании двустороннего сотрудничества. Анализ показывает, что инвестиционные отношения между Казахстаном и странами Центральной Азии развиваются новыми темпами. Однако основными инвесторами являются крупные иностранные государства. В перспективе, у Казахстана есть большие возможности для развития инвестиционного сотрудничества со странами Центральной Азии. Для этого политическая и экономическая нестабильность в регионе, а также определенные внутренние проблемы в странах могут создать благоприятные условия для притока прямых инвестиций за счет устранения слабой правовой базы и неприемлемого уровня коррупции.

Ключевые слова: Казахстан, Центральная Азия, сотрудничество, товарооборот, инвестиции, анализ

Introduction. Regional economic cooperation plays a decisive role in promoting economic growth and development among countries within a specific geographical area. At the meeting with the Secretaries of the Security Councils of Central Asian countries held in Astana on May 16, 2024, President Kassym-Jomart Tokayev outlined the key directions for strengthening cooperation among Central Asian countries in the field of security and emphasized the importance of regional cooperation through various summits and international meetings, noting the strategic focus in recent years on increasing trade, security, and mutual support among Central Asian states. The President highlighted that over the past five years, economic cooperation among Central Asian countries has increased by 80%, with regional trade exceeding 10 billion US dollars, demonstrating significant growth. He stressed the need to further expand trade by developing transport and logistics infrastructure, increasing import-export transactions, and diversifying the range of goods traded (President Tokayev, 2024). Close economic ties with Central Asian states are of strategic importance for Kazakhstan, as the region's geographical and resource potential, as well as shared directions of economic development, enable the achievement of common goals. However, the effective use of these opportunities depends on a well-designed development strategy and the active participation of all stakeholders.

Literature Review. Regional cooperation is considered in modern scholarship

as a complex interdisciplinary issue at the intersection of economics, history, international relations, regional studies, philosophy, and other social and humanitarian disciplines. Issues of regional economic cooperation have been comprehensively studied in the scientific works of numerous foreign, domestic, and Central Asian researchers and examined from various theoretical and methodological perspectives.

Economic relations between states in a single region usually begin with the establishment of mutual trade ties. The prerequisites for the emergence of international trade, its economic significance, consequences, and impact on the development of national economies have been widely studied in economics. In analysing these issues, alongside representatives of the classical school of economics, prominent scholars from other directions of economic thought have also made significant contributions. In particular, the scientific and theoretical works of A. Smith, D. Ricardo, J. S. Mill, J. M. Keynes, R. Prebisch, A. Hirschman, and other scholars constitute an important methodological foundation for revealing the essence of trade relations between countries. In the works of R. Mogilevskii (Mogilevskii, 2012) and Iisus Felipe and Utsav Kumar (Felipe et al., 2010), it is argued that efficiency can be ensured by improving the performance of border services. The authors consider these factors as key prerequisites for deepening economic ties within the region.

The works of Malcolm Dowling and Ganesan provide an in-depth examination of regional issues (Dowling et al., 2008). The authors seek to explain differences in countries' development trajectories through institutional and structural characteristics—meanwhile, the works of R. Pomfret (Pomfret, 1995) and Zh. Karshibaev (2015) emphasise the interaction of the studied region with the global economic space. These authors consider the attraction of foreign direct investment from leading world powers, the movement of financial flows, and external labour migration as important factors of regional economic development. Numerous scholars have extensively examined the theoretical and methodological foundations of investment cooperation. In particular, Bo Södersten, A. Budnikovsky, and other researchers pay special attention to analysing the reasons for the emergence of international investments, their objectives, and the patterns of capital movement between countries.

The works of domestic and Central Asian researchers occupy a special place in the study of regional cooperation issues. In particular, V. Dodonov's research analyses the main trends in economic interaction between Kazakhstan and other Central Asian states. The author focuses on the development of intra-regional trade relations, the features of investment cooperation, and the formation of joint entrepreneurial entities (Dodonov, 2023). In addition, a team of authors comprising G. Karasaev, Q. Ensenov, B. Naimanbaev, Z. Bakirova, and F. Kabdrakhmanova comprehensively examines Kazakhstan's cooperation with Central Asian countries from 1991 to 2000. Within the framework of the study, the main directions and

features of the development of political, economic, cultural, and social interaction are analysed (Karassayev et al., 2023).

The works of Uzbek researchers also widely address issues of regional economic cooperation in Central Asia. One such study is by G. Mirzaev, which analyses the stages of formation, development trends, and potential future directions of economic interaction between Uzbekistan and Central Asian states. The author places particular emphasis on the importance of intra-regional trade ties, the development of joint enterprises, and contractual and legal mechanisms regulating interstate economic relations (Mirzaev, 2020).

The works of Kyrgyz authors focus on specific aspects of regional economic cooperation. In particular, Zh. Omurova, A. Arzymatova, and Yu. Lysenko analyse economic relations between Kyrgyzstan and China by examining the dynamics, emerging challenges, and prospects of bilateral trade and economic ties within the framework of the “One Belt, One Road” initiative (Omurova et al., 2023).

Among Tajik researchers, some authors have studied regional cooperation in Central Asia. For example, in M. Rakhimov's works, the internal and external dimensions of regional cooperation are analysed, and the importance of strengthening mutual trust and sustained dialogue among Central Asian countries is emphasised. In addition, the study analyses the impact of geopolitical, economic, and security-related challenges on the development of regional cooperation (Rakhimov, 2010).

Kazakhstani researchers, including M. S. Akimbekov, have devoted considerable attention to analysing relations between Kazakhstan and Central Asian countries, as well as the place of Central Asian states in the global system and the policies of leading world powers toward the region (Akimbekov, 1998). The author's studies are valuable for their consideration of regional processes within the context of international relations. In addition, the works of Sh. B. Zakieva, S. Kushkumbayev, K. S. Mukhtarova, L. Sh. Sultanova, A. T. Yerimpasheva, and other scholars comprehensively examine various aspects of regional economic cooperation in Central Asia. By analysing the characteristics of economic, political, and social interactions among Central Asian countries and neighbouring states, these authors have made a significant contribution to a deeper understanding of the substance and logic of the development of regional cooperation. Their studies comprehensively describe the main directions of regional economic integration processes, as well as the pressing issues and limitations arising in this field.

Materials and Methods. The present study aims to conduct a comprehensive analysis of trade and investment relations between Kazakhstan and the Central Asian states, to identify the key trends and factors that shape the dynamics of regional economic interaction. During the research, correlation and regression analyses were applied to assess the degree of interdependence between Kazakhstan and the Central Asian countries. From a methodological perspective, approaches used in previous studies analysing economic relations between Japan and Central

Asia (Abaidullayeva et al., 2024) were taken as a basis and adapted to the study of economic relations between Kazakhstan and the Central Asian states.

Within the analysis framework, gross domestic product (GDP) was selected as the primary macroeconomic indicator of economic development. At the same time, trade turnover between Kazakhstan and the Central Asian countries was chosen as the key variable reflecting mutual economic ties. For the study, country-specific statistical data for the period from 1991 to 2024 were collected from open sources. In addition, data on the volume of foreign trade turnover and attracted investment between Kazakhstan and the Central Asian states for the period 2014–2024 were used, drawn from official national and international statistical sources. During the study, the following issues were examined:

1. A correlation analysis of GDP between Kazakhstan and the Central Asian countries was conducted. This may indicate economic interdependence and the influence of similar factors.

2. The volume of foreign trade between Kazakhstan and the Central Asian states was analysed, and its development dynamics were determined based on the indicators.

3. Investment issues between the countries were examined. Changes and impacts were identified through tables and dynamics.

The formula for determining the pairwise correlation coefficient is as follows:

$$r = (\Sigma(x_i - \bar{x})(y_i - \bar{y})) / (\sqrt{\Sigma(x_i - \bar{x})^2} \sqrt{\Sigma(y_i - \bar{y})^2})$$

where: x represents values for Kazakhstan, y represents values for another country, $\bar{x}$ and $\bar{y}$ are the mean values, and i denotes the number of years.

A positive value of the correlation coefficient indicates a positive (direct) relationship between the variables, a negative value indicates a negative (inverse) relationship, and a zero value indicates the absence of a relationship. If the absolute value of the correlation coefficient is $0.1 < |r_{xy}| < 0.3$, the relationship is weak; if $0.3 < |r_{xy}| < 0.5$, it is moderate; if $0.5 < |r_{xy}| < 0.7$, it is noticeable; if $0.7 < |r_{xy}| < 0.9$, it is high; and if $0.9 < |r_{xy}| < 1$, it is very high.

The calculations were carried out using Microsoft Excel software.

To achieve the research objective, a comparative analysis was conducted of the economic indicators of Kazakhstan and other Central Asian countries, along with an economic and statistical analysis of trade, investment, and production volumes.

Results. Strengthening economic ties between Kazakhstan and the Central Asian countries contributes to regional stability, the development of transport, logistics, and industrial infrastructure, and the improvement of the socio-economic well-being of the population.

Table 1 presents the dynamics of gross domestic product (GDP) of Kazakhstan and the Central Asian countries. According to the table, Kazakhstan ranks first

among the countries of the region in terms of economic size. In general, because the economies of Central Asian states are susceptible to external economic influences, fluctuations can be observed in GDP indicators. Nevertheless, a comparative analysis over the years shows that a positive dynamic of economic growth is gradually forming in most countries.

Table 1 – GDP of Kazakhstan, Uzbekistan, Kyrgyzstan, Turkmenistan, and Tajikistan, 1991–2023 (billion USD)

YearS	Kazakhstan	Kyrgyzstan	Uzbekistan	Tajikistan	Turkmenistan
1991	24,92	2,24	13,8	2,55	3,21
1992	24,92	2,32	12,95	1,92	3,2
1993	23,41	2,03	13,1	1,65	3,18
1994	21,25	1,68	12,9	1,52	2,55
1995	20,37	1,66	13,35	1,23	2,48
2000	18,29	1,37	13,76	0,86	2,9
2001	22,15	1,53	11,4	1,08	3,53
2002	24,64	1,61	9,69	1,22	4,46
2003	30,83	1,92	10,13	1,56	5,98
2004	43,15	2,21	12,03	2,08	6,84
2005	57,12	2,46	14,31	2,31	8,1
2010	148,05	4,79	49,77	5,64	22,59
2015	184,39	6,68	86,2	8,27	35,8
2020	171,08	8,27	60,22	8,13	45,82
2021	197,11	9,25	69,6	8,94	50,01
2022	225,5	12,13	81,15	10,71	56,54
2023	262,64	13,99	101,59	12,06	60,63
2024	280,0	15,0	110,0	13,01	62,1

Prepared based on World Bank Group (2024) data on GDP (current US\$).

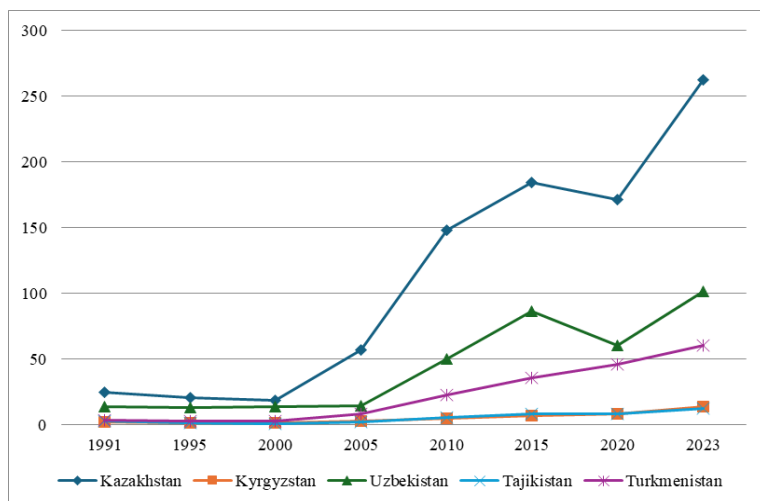


Figure 1 – Changes in GDP dynamics of the Central Asian countries, 1991-2023.

Note: Compiled based on Table 1.

Based on the correlation analysis in Table 1, the dependent variable is Kazakhstan's GDP – y ; the independent variables are: Kyrgyzstan's GDP – x_1 ; Uzbekistan's GDP – x_2 ; Tajikistan's GDP – x_3 ; Turkmenistan's GDP – x_4 ; the time period is 1991–2024. The matrix of pairwise correlation coefficients is presented in Table 2.

Table 2 – Matrix of pairwise correlation coefficients between the GDP of Central Asian countries and Kazakhstan's GDP

Countries		Kazakhstan	Kyrgyzstan	Uzbekistan	Tajikistan	Turkmenistan
		y	x_1	x_2	x_3	x_4
Kazakhstan	y	1.00	0.93	0.94	0.98	0.96
Kyrgyzstan	x_1	0.93	1.00	0.92	0.98	0.98
Uzbekistan	x_2	0.94	0.92	1.00	0.96	0.95
Tajikistan	x_3	0.98	0.98	0.96	1.00	0.99
Turkmenistan	x_4	0.96	0.98	0.95	0.99	1.00

Further, a regression analysis of trade turnover with Central Asian countries in relation to Kazakhstan's GDP dynamics for 2014–2024 is presented. This analysis allows for the determination of the strength and nature of economic ties. For this purpose, data on GDP and trade turnover indicators are used. A more detailed view is provided in Table 3 and Figure 2.

Table 3 – Kazakhstan's foreign trade turnover with Central Asian countries, 2014–2024, million USD

Years	Tajikistan	Turkmenistan	Uzbekistan	Kyrgyzstan
2014	699 865,60	475 044,30	2 101 609,90	1 056 018,00
2015	583 711,20	178 248,50	1 667 951,20	502 245,10
2016	590 249,40	283 499,20	1 512 991,50	668 602,20
2017	781 667,40	99 606,00	1 985 347,40	758 430,70
2018	845 896,60	99 553,30	2 488 155,50	865 257,00
2019	762 857,6	145 913,8	3 415 131,5	939 776,1
2020	791 428,5	127 979,6	2 930 694,5	848 592,4
2021	1 163 781,9	254 211,5	3 833 914,1	1 050 532,2
2022	1 384 860,4	438 691,7	4 921 935,9	1 246 877,0
2023	1 129 966,5	562 949,0	4 417 919,2	1 688 135,6
2024	1 213 960,4	555 701,6	4 135 916,0	1 713 213,0

Prepared based on data from the Ministry of Finance of the Republic of Kazakhstan (2024).

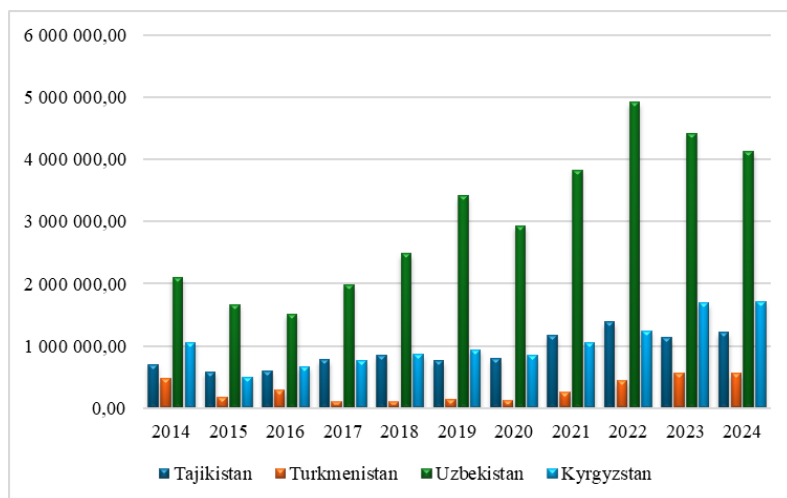


Figure 2 – Dynamics of trade turnover between Kazakhstan and Central Asian countries, 2014–2024

Note: Compiled based on Table 2.

The share of foreign trade, which was 6% in 2014, increased to 10–12% by 2024. This means that every tenth agreement falls within neighbouring countries' share:

- Uzbekistan – 6–7%
- Kyrgyzstan – 2–3%
- Tajikistan – 1%
- Turkmenistan – 1%

The largest trade turnover is with the European Union, China, and Russia. Trade volume with Central Asian countries is relatively small, yet it continues to grow steadily.

The share of other countries:

- Russia – 18–20%
- China – 18–19%
- EU – 28–30%
- South Korea – 4%
- USA – 2%

A simple linear regression analysis was conducted to assess the relationship between Kazakhstan's gross domestic product and its trade turnover with each country. The results of the analysis are presented below:

Table 4 – Results of regression analysis of trade relations between Kazakhstan and the Central Asian countries

Country	Slope coefficient	Intercept coefficient	R ²	Explanation
Uzbekistan	19,70	-912,83	0,51	When GDP increases by \$1 billion → trade grows by +\$19 million
Kyrgyzstan	8,33	-640,01	0,84	When GDP increases by \$1 billion → trade grows by +\$8 million
Tajikistan	4,49	+3,56	0,50	When GDP increases by \$1 billion → trade grows by +\$4.5 million
Turkmenistan	3,61	-431,34	0,71	When GDP increases by \$1 billion → +\$3.6 million in trade

The slope coefficient indicates how much trade turnover increases for each \$ 1 billion increase in Kazakhstan's GDP. The intercept coefficient represents the initial value at a theoretical GDP of zero and often serves as part of the formula. The R² value reflects the strength of the relationship (the closer to 1, the better the model describes the data). The table summarising key investment relations between Kazakhstan and its main investment partners shows that China and Russia are Kazakhstan's primary partners, while the EU also plays a significant role.

Intra-regional foreign direct investment (FDI) in Central Asian countries reached \$834 million by the end of the first half of 2024, which is 40% higher than in 2022. By 2022, mutual investments in the manufacturing sector had increased 2.5 times, indicating the highest growth rate in cumulative FDI.

According to the EBRD report, Kazakhstan is the leading investment-attracting country in Central Asia. As of the first half of 2024, 80% of total outward investments, or \$671 million, were attributed to the Republic. Uzbekistan's importance as a regional investment-attracting country in Central Asia is also increasing. Direct investments from Uzbekistan grew 6.8 times, rising from \$24 million in 2022 to \$164 million by the end of the first half of 2024.

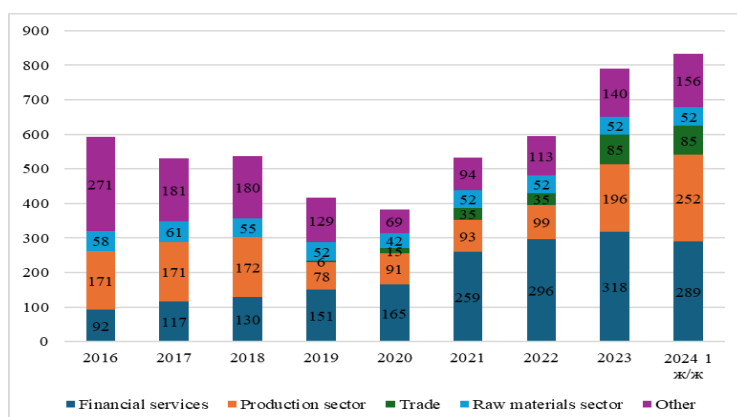


Figure 3 – Cumulative intra-regional investments in Central Asia (sectoral structure), million USD

The following trends dominate mutual investments in Central Asia:

1. Green region projects continue to be the main focus of new investments.
2. The manufacturing sector remains the most attractive for mutual investments.
3. Active growth of new projects in the agro-industrial sector continues.

The role of Central Asia as a hub for attracting mutual investments continues to grow. By the end of the first half of 2024, the share of regional countries in attracted FDI exceeded 50%, with the largest contributions to growth over the past 1.5 years coming from Kazakhstan (+17%) and Uzbekistan (+5.2%) (Eurasian Development Bank, 2024).

As the largest economy in the region, Kazakhstan is not only an investment recipient but also an important source of investment potential for other Central Asian states (see Table 5, Figure 5).

Investment cooperation between Kazakhstan and the Central Asian countries serves as a key mechanism for regional stability and economic growth. If properly coordinated, it can significantly enhance the region's cooperative potential and elevate Central Asia to a new level of development.

Table 5 –FDI from Kazakhstan to Central Asian countries, million USD

Years	Volume of investments from Kazakhstan to Central Asian countries			
	To Kyrgyzstan	To Tajikistan	To Uzbekistan	To Turkmenistan
2014	6,4	7,9	-5,0	8,2
2015	0,9	1,9	-0,2	9,3
2016	21,1	5,8	0,1	7,8
2017	44,8	0,4	2,1	3,1
2018	50,4	6,8	8,6	5,4
2019	103,5	1,9	37,3	6,2
2020	85,5	4,6	50,0	9,1
2021	65,3	-1,6	111,5	6,9
2022	178,7	-4,5	42,3	7,1
2023	4,2	1,2	58,8	10,3
2024	29,7	10,7	99,2	12,2

Prepared based on the investment direction data from the National Bank of the Republic of Kazakhstan (2024).

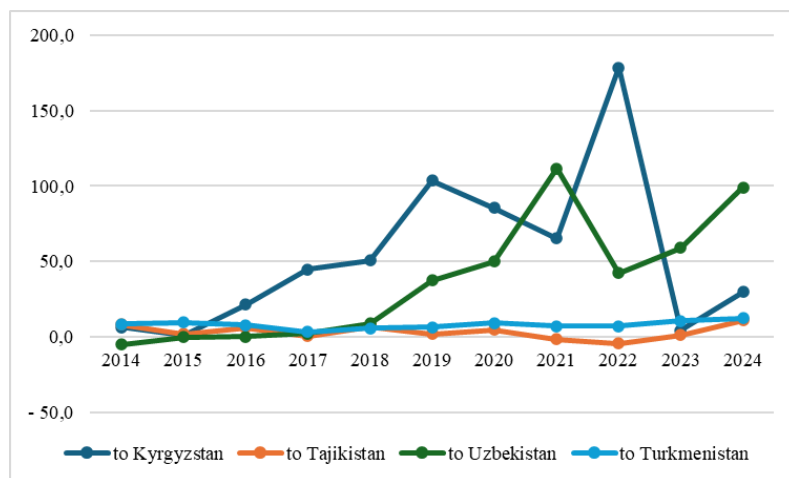


Figure 4 – Dynamics of FDI from Kazakhstan to Central Asian countries

Note: Based on Table 5.

Investments from Central Asian countries into Kazakhstan are very small, weak, and unstable, as shown in Table 6.

Table 6 –Volume of investments coming to Kazakhstan from Central Asian countries, million USD

Years	Volume of investments received by Kazakhstan from Central Asian countries			
	From Kyrgyzstan	From Tajikistan	From Uzbekistan	From Turkmenistan
2014	-25.6	0.5	0.2	0.5
2015	-31.5	0.9	-5.7	0.3
2016	-4.8	-0.2	0.3	0.1
2017	0.5	0.3	7.3	2.2
2018	1.5	0.1	-2.6	-0.4
2019	1.7	11.7	-0.2	-0.2
2020	-2.8	0.4	-26.1	-0.2
2021	-1.1	-0.2	5.2	0.3
2022	-9.8	0.1	-16.3	0.3
2023	10.1	4.3	1.1	21.0
2024	23.9	1.6	3.5	0.4

Prepared based on the investment direction data from the National Bank of the Republic of Kazakhstan (2024).

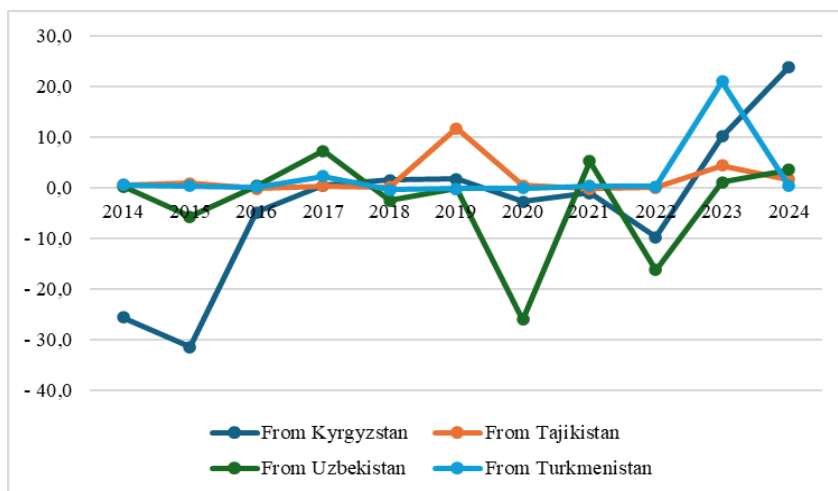


Figure 5 – Dynamics of FDI from Central Asian countries to Kazakhstan

Note: Based on Table 6.

As shown in the table above, Uzbekistan is the largest investor in Kazakhstan among Central Asian countries. At the same time, Kazakhstan has made significant investments across sectors, including oil and gas, agriculture, and transportation.

Investment levels from Kyrgyzstan to Kazakhstan are relatively low, with investments mainly directed to industry, energy, and agriculture. Conversely, Kazakhstan has invested more broadly in Kyrgyzstan, including mining, energy, and infrastructure sectors. Tajikistan's investments in Kazakhstan focus on mining and hydroelectric projects, while Kazakhstan's investments in Tajikistan are diversified, covering the transport, construction, and mining sectors. Investments from Turkmenistan to Kazakhstan are relatively small and directed mainly to construction and other sectors. Meanwhile, Kazakhstan has invested in Turkmenistan across multiple sectors, including oil and gas, mining, and transportation.

Discussion. The cross-correlation between Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan is very high (close to 1), indicating a strong positive linear relationship (multilateralism) among them. This may reflect a high degree of economic, political, or cultural integration.

Regression analysis highlights Kazakhstan's close trade and economic ties with Kyrgyzstan and Uzbekistan, while relations with Turkmenistan and Tajikistan show moderate dependence. Special attention should be given to Uzbekistan, as its growing market and improving trade and economic conditions provide favourable opportunities for expanding cooperation. In summary, the analysis confirmed a high degree of interdependence between Kazakhstan's economic development and trade turnover with Central Asia. Key areas for strengthening Kazakhstan's position in regional markets include:

- Developing transport and logistics infrastructure;
- Reducing barriers to mutual trade;
- Expanding focus on non-commodity sectors of the economy.

Investment cooperation between Kazakhstan and Central Asian countries is important and evolving, with growing investment opportunities across various sectors. Central Asian states are actively seeking foreign investments to develop their economies, infrastructure, and industries. Investment in infrastructure, including transport and logistics, remains a key focus, facilitating trade and economic growth and positioning Kazakhstan as a transit hub for goods and services. Investments in infrastructure, energy, and mining also promote economic growth and enhance regional connectivity.

Conclusion. The development of trade and investment cooperation between Kazakhstan and Central Asian countries is heavily influenced by global and regional economic factors. Over the past decades, Central Asia has become an important hub in the international arena. Active engagement and development of relations with neighbouring countries are crucial for Kazakhstan. Analysing various aspects of cooperation helps to understand its significance and potential. This study focused on three main aspects of economic interconnection among these countries. One key finding is the positive correlation between Kazakhstan's GDP and those of other Central Asian countries, reflecting a degree of economic interdependence.

The research emphasises the importance of Kazakhstan's foreign trade with Central Asia. However, not all countries contribute equally: the majority of Kazakhstan's trade is with Russia, China, and the EU, while trade with Central Asian countries accounts for 10–12%. Trade with Uzbekistan and Kyrgyzstan remains stable and growing, whereas trade with Tajikistan and Turkmenistan is weaker but gradually increasing. Compared to 2014, trade has approximately doubled. To expand investment with other countries, Kazakhstan needs to develop trade and transit logistics. Kazakhstan's investment activity in Central Asia plays a significant role in bilateral relations. The analysis shows that investment cooperation with Central Asian countries is still emerging, while the main investors remain large non-regional states. In the future, as economic ties expand, Kazakhstan has substantial potential to develop investment relations with Central Asian countries. Achieving this requires mitigating political and economic instability in the region, addressing domestic challenges, strengthening legal frameworks, and reducing corruption to create favourable conditions for FDI inflows.

Overall, the study demonstrates that Kazakhstan has the potential to enhance economic development with Central Asian countries, increase trade turnover, and attract direct foreign investment both bilaterally and regionally. Given the current global circumstances, strengthening cooperation with neighbouring countries is also essential for economic security.

References

- Abaidullayeva M.M., Rhajiyeva G.U. (2024) «5+1» cooperation formats in the Central Asian region: analysis of economic interaction with Japan. *Statistika, uchet i audit*, №3(94). — P. 39–54. DOI: 10.51579/1563-2415.2024.-3.04. [Electronic resource] Available at: <https://doi.org/10.51579/1563-2415.2024.-3.04> (accessed: 23.05.2025). (in English)
- Akimbekov S.M. (1998) Afganskii uzel i problemy bezopasnosti Tsentral'noi Azii [The Afghan knot and security problems of Central Asia]. Almaty, 279 p. (in Russian)
- Dodonov V. (2023) Dvustoronnee ekonomicheskoe sotrudnichestvo Kazakhstana i stran Tsentral'noi Azii [Bilateral economic cooperation of Kazakhstan and the countries of Central Asia]. *Russia and New States of Eurasia*, no. 2. — P. 140–159. DOI: <https://doi.org/10.20542/2073-4786-2023-2-140-159>. (in Russian)
- Dowling M., Wignaraja G. (2006). *Central Asia after Fifteen Years of Transition: Growth, Regional Cooperation, and Policy Choices*. Manila: Asian Development Bank. — 25 p. (in English)
- Evraziiskii bank razvitiya (2024) Monitoring vzaimnykh investitsii EABR – Evraziiskii region [Monitoring of mutual investments by the EDB – Eurasian region]. [Electronic resource] Available at: <https://eabr.org/analytics/special-reports/monitoring-vzaimnykh-investitsiy-eabr-2024-evraziyskiy-region/> (accessed: 29.05.2025). (in Russian)
- Felipe J., Kumar U. (2010). *The Role of Trade Facilitation in Central Asia: A Gravity Model*. Manila: Asian Development Bank: <https://www.researchgate.net/publication/44792616> (дата обращения: 23.05.2025) (in English)
- Karassayev G., Yensenov K., Naimanbayev B., Bakirova Z., Kabdrakhmanova F. (2023). Mutual Cooperation of the Republic of Kazakhstan with the States of Central Asia in 1991–2000. *RIVAR*, no. 10(29). DOI: <https://doi.org/10.35588/rivar.v10i29.5820>. (in English)
- Karshibaev J. (2015). *Monetary Cooperation Perspective in Central Asia*. 3rd Economics & Finance Conference, Rome. (in English): <https://www.researchgate.net/publication/284113803> (accessed: 23.05.2025).
- Komitet gosudarstvennykh dokhodov Minfina RK (2024) Statisticheskie dannye po vneshnei torgovle [Foreign trade statistics]. [Electronic resource] Available at: http://kgd.gov.kz/ru/exp_trade_files (accessed: 27.05.2025). (in Kazakh)
- Mirzaev G. (2020). Economic Cooperation of the Republic of Uzbekistan with the Countries of Central Asia: Formation, Development, and Prospects. *TAJ SSEI*. — P. 283–294. DOI: <https://doi.org/10.37547/tajssei/volume02issue11-49>. (in English)
- Mogilevskii R. (2012). *Trends and Patterns in Foreign Trade of Central Asian Countries*. Bishkek: Institute of Public Policy and Administration. — 60 p.: <https://www.researchgate.net/publication/315768568> (in English)
- Natsional'nyi bank RK (2024). Investitsii po napravleniyu vlozheniya [Investment by direction of inflow]. [Electronic resource] Available at: <https://nationalbank.kz/ru/news/pryamyie-investitsii-po-napravleniyu-vlozheniya> (accessed: 29.05.2025). (in Kazakh)
- President Tokayev Outlines Key Pillars for Central Asian Security (2024). *The Astana Times*, May 16. [Electronic resource] Available at: <https://astanatimes.com/2024/05/president-tokayev-outlines-key-pillars-for-central-asian-security/> (accessed: 25.05.2025). (in English)
- Omurova J., Arzymatova A., Lysenko Y. (2023). Economic Relations of Kyrgyzstan and PRC: History, Problems, Prospects. *World Economy and International Relations*, vol. 67, no. 6. — P. 116–123. DOI: <https://doi.org/10.20542/0131-2227-2023-67-6-116-123>. (in English)
- Pomfret R. (1995). *The Economies of Central Asia*. Princeton: Princeton University Press. — 234 p. (in English)
- Rakhimov M. (2010) Internal and External Dynamics of Regional Cooperation in Central Asia. *Journal of Eurasian Studies*, no. 1. — P. 95–101. DOI: <https://doi.org/10.1016/j.euras.2010.04.002>. (in English)
- World Bank Group (2024) GDP (current US\$) Uzbekistan, Kazakhstan, Kyrgyz Republic, Turkmenistan, Tajikistan. [Electronic resource] Available at: <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD> (accessed: 27.05.2025). (in English)

Publication Ethics and Publication Malpractice in the journals of the Central Asian Academic Research Center LLP

For information on Ethics in publishing and Ethical guidelines for journal publication see <http://www.elsevier.com/publishingethics> and <http://www.elsevier.com/journal-authors/ethics>.

Submission of an article to the journals of the Central Asian Academic Research Center LLP implies that the described work has not been published previously (except in the form of an abstract or as part of a published lecture or academic thesis or as an electronic preprint, see <http://www.elsevier.com/postingpolicy>), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. In particular, translations into English of papers already published in another language are not accepted.

No other forms of scientific misconduct are allowed, such as plagiarism, falsification, fraudulent data, incorrect interpretation of other works, incorrect citations, etc. The Central Asian Academic Research Center LLP follows the Code of Conduct of the Committee on Publication Ethics (COPE), and follows the COPE Flowcharts for Resolving Cases of Suspected Misconduct (http://publicationethics.org/files/u2/New_Code.pdf). To verify originality, your article may be checked by the Cross Check originality detection service <http://www.elsevier.com/editors/plagdetect>.

The authors are obliged to participate in peer review process and be ready to provide corrections, clarifications, retractions and apologies when needed. All authors of a paper should have significantly contributed to the research.

The reviewers should provide objective judgments and should point out relevant published works which are not yet cited. Reviewed articles should be treated confidentially. The reviewers will be chosen in such a way that there is no conflict of interests with respect to the research, the authors and/ or the research funders.

The editors have complete responsibility and authority to reject or accept a paper, and they will only accept a paper when reasonably certain. They will preserve anonymity of reviewers and promote publication of corrections, clarifications, retractions and apologies when needed. The acceptance of a paper automatically implies the copyright transfer to the Central Asian Academic Research Center LLP.

The Editorial Board of the Central Asian Academic Research Center LLP will monitor and safeguard publishing ethics.

Requirements for articles design for publication in the journal are available on the websites:

[www: nauka-nanrk.kz](http://www.nauka-nanrk.kz)

ISSN 2518–1467 (Online),

ISSN 1991–3494 (Print)

<http://www.bulletin-science.kz/index.php/en>

Managing Editor: A.Shormakova

Editors: D.S. Alenov, M.Konyrbekov

Computer layout: G.D. Zhadyranova

Signed for print: August 31, 2026

Format: 70×90 1/16. 48.0 printed sheets. Order No. 4