

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

**SCIENTIFIC JOURNAL OF
PEDAGOGY AND ECONOMICS**

**№1
2026**

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



CENTRAL ASIAN ACADEMIC
RESEARCH CENTER



SCIENTIFIC JOURNAL OF PEDAGOGY AND ECONOMICS

PUBLISHED SINCE 1944

1 (419)

January – February 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 Рафиққызы, 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 Лязат 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>.

ЛУКЪЯНЕНКО 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 Рафикевна, 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 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

Abuova B.P., Abisheva S.D., Adibayeva Sh.T. The methodological potential of Kazakhstan’s children’s literature in the educational process on the example of “Kazakhstan fairy tales” by Yuri Serebryansky.....	19
Azybayev M., Zhaidakbayeva L.K. Pedagogical and technological aspects of blended synchronous learning Implementation.....	38
Bazarbayeva A.N., Mubarakov A.M., Ibadulla S.N. Model of didactic principles for using the system of collaborative open learning in the training of future computer science teachers.....	55
Yerbolatov N. N.*, Toktaganova G.B., Nazarova G.A. Diagnostics of learning results of master’s students based on the integration of education, science and production and prospects for improvement.....	69
Zhaiynbayeva S.K., Maimataeva A.D., Kossauova A.K. Formation of professional competence of future biology teachers based on the “flipped classroom” technology.....	87
Zhambylkyzy M., Baibossynova T., Aleixo M. Using action research as a method for professional development of efl teachers.....	102
Zharylgapova D.M., Karabala T.M., Pirmaganbet A.E. Increasing students' interest and intellectual abilities in learning physics through mobile applications.....	116
Imangaliyeva B., Yermakhanov M., Aldiyarova A. Methods of teaching chemistry to students with special educational needs: kazakh secondary school practice.....	133
Kazhenova Zh.S., Rakhmatullina Z.T. Organizing the educational process with kits for educational robotics.....	151
Kazbay P.A., Kudaibergenova K.T. Teaching the image of "hero-girl" in kazakh epics through critical thinking technology in universities.....	174
Kaisarova A.S., Zhensikbaeva N.Zh., Sabyrbaeva B.T. Local studies as a means of student personality socialization.....	187
Medeubaeva K.T., Khassanova I.U., Seitenova S.S. Artificial intelligence potential in personalizing teacher training trajectories: Kazakhstan’s experience.....	204

Nabi N.B., Rakhmetova R.S.

The importance of the 4c model in the formation of communicative skills and its conceptual basis.....222

Nurzhanova A.R., Zhussupova R.F., Jaleniauskiene E.

Artificial intelligence in education: evaluating ai-powered educational platforms.....238

Nurizina M.M., Baimukhanbetov B.M., Issayev M.S.

Developing learners' soft skills: exploring the impact of theoretical approaches.....259

Nurlan M., Bakirci N., Aden Zh.

The relevance of teaching the genre of zhyr using new technologies.....275

Orynbasar T.O., Amirbekova A.B.

The writer's thesaurus and methodology of teaching literary style: a systematic review using the PRISMA method.....295

Pernebayeva F., Bakesh Z., Kalymbetova A.

Ways to form innovative competence in biology teaching.....319

Seitbekova G.O., Kokzhayeva A.B., Suleimenkulova G.T

Development and assessment of students' mathematical functional literacy through solving textual problems with financial content.....338

Semenikhina S.F., Semenikhin V.V.

Review of the implementation of the alliance "school – university – science – industry" in the holistic pedagogical process.....362

Smatova K.B., Alimbayeva S.K., Ospanbayeva M.P.

A study of the transformation of school readiness diagnostics into a digital format.....378

Toktagulova U.S., Karmenova N.N., Sadykova D.A.

Formation of students' conceptions in determining the role and effectiveness of training-field practice in the development of theoretical knowledge.....396

Ualikhanova A., Abuov A.E., Bolysbaev D.S.

Methodological approaches to studying yard clubs' role in forming children's spiritual values.....417

Usmanova K., Stycheva O.

The use of the official-business style in the educational process as a means of professional training of future Russian language teachers.....433

Khassenova M.T., Smagulov M.Z.

chemistry without barriers: strategies inclusive learning in class.....455

ECONOMY

Abdullaev A.M., Kadyrova M.B., Kuralbaev A.A. Human resources management in the local government system: training and development of professional competencies.....	477
Amanbai A., Rakhimberdinova M.U., Massanova L.E. Analysis of the development of the housing construction market in the Republic of Kazakhstan.....	505
Amangozhayeva A.B., Akpanov A.K., Kassymbekova G.R. Determinants of banking sector vulnerability in Kazakhstan: a multi-method analysis of market, credit, and liquidity risks.....	523
Beisenbayeva A., Yernazarova U., Turdaliyeva U. Assessing the effectiveness of internal control with ESG risks: a model for the banking sector of Kazakhstan.....	539
Domalatrov Ye.B., Abylaikhanova T.A. Neural networks as a tool for improving the efficiency of human capital management: empirical analysis and predictive modeling.....	554
Yeltay B.B., Azatbek T.A. Assessment of the impact of changes in global prices for non-ferrous metals on the export dynamics of Kazakhstan's non-ferrous metallurgy.....	569
Elshibekova K.Zh., Eralina E.M. Competitive advantages of domestic robotic systems in the industry of kazakhstan.....	592
Yendybayev S.T., Zhussipova E.Ye., Duisenbekuly A.-K.D. Adaptation of startup valuation methodologies in Kazakhstan under conditions of limited financial information.....	613
Yerimpasheva A., Tarakbaeva R., Lyu Zh. Investment interaction between Kazakhstan and China as a factor in the formation of transcontinental transport corridors.....	631
Zhumaldinova D., Yeshenkulova G., Wronka-Pośpiech M. Emerging methodologies and technologies in creative startups: a configurational review.....	647
Kadyrbekova D.S., Klimova T.B., Duiskenova R.Zh. International tourism in Kazakhstan: factors attracting foreign tourists and opportunities to strengthen the country's brand.....	664
Kadyrova K., Davletova M., Amirgaliyeva A. Marketing strategies of small and medium-sized enterprises in Kazakhstan under digital transformation.....	681

Kalbayeva N.T., Satenov B.I., Khassenova L.A.

The impact of financial determinants on the export development of meat production in Turkestan region: a scenario-based approach.....699

Karimova B., Kassenova G., Supugaliyeva G.

Volatility of financial instruments on the Kazakhstan stock market: measurement and forecasting.....722

Kozhakhmetova A.K., Yesmurzayeva A.B., Anarkhan A.K.

Integrated ESG assessment of the efficiency of green energy projects: economic, social, and environmental aspects.....741

Kuralbayeva A.Sh., Issayeva G.K., Makhatova A.B.

Fintech tools as a mechanism for stimulating investment in the sustainable development of rural regions of Kazakhstan.....767

Meldebekova A., Kanabekova M., Azbergenova R.

Innovation management in Kazakhstan's higher education: indicators and governance models.....783

Moldazhanov M.B., Takhtaeva R.Sh., Dyusembinova Zh.S.,

The impact of economic activity in the Semipalatinsk nuclear safety zone and the city of Kurchatov on the development of STS nuclear tourism.....807

Nurbatsin A., Kireyeva A.A.

Digital technologies as a tool for improving the quality of higher education.....829

Nurbekova Sh. K., Yessimzhanova S. R., Alimzhanova L.M.

Improving the efficiency of transport and logistics services management in special economic zones based on digitalization.....851

Nurmukhanova G.Zh., Abzhatova A.K., Kurmangaliyeva A.K.

The relationship between the labor market and higher education in Kazakhstan: trends and development directions.....875

Polezhayeva I.S., Suyundikov A.S., Statsenko O.A.

The impact of digitalization on improving the economic efficiency of the energy sector of the Republic of Kazakhstan.....892

Razakova D.I., Alshanov R.A., Kazybayeva M.N.,

Digital transformation of Kazakhstan's industry: an empirical analysis of enterprise readiness and implementation barriers.....916

Sagindykova G.M., Tussibayeva G.S., Balginova K.M.

Innovative strategies for the formation of social responsibility and motivation of participants the pension system of the Republic of Kazakhstan in the context of digitalization.....935

Sadykov E., Zhamkeyeva M., Konyrbekov M.

The structure of markups in Kazakhstan's economy and its impact on inflationary trends.....955

МАЗМҰНЫ

ПЕДАГОГИКА

Абуова Б.П., Абишева С.Д., Адибаева Ш.Т. Қазақстан балалар әдебиетінің білім беру үрдісіндегі әдістемелік әлеуеті Юрий Серебрянскийдің «Қазақстан ертегілері» мысалында.....	19
Азыбаев М., Жайдакбаева Л.К. Аралас синхронды оқытуды жүзеге асырудың педагогикалық және технологиялық аспектілері.....	38
Базарбаева А.Н., Мубаракوف А.М., Ибадулла С.Н. Болашақ информатика пәнінің оқытушыларын даярдауда біреккен ашық оқыту жүйесін пайдаланудың дидактикалық принциптер моделі.....	55
Ерболатов Н.Н.* , Тоқтағанова Г.Б., Назарова Г.А. Магистранттарды білім, ғылым және өндіріс интеграциясы негізінде даярлау нәтижелерін диагностикалау және перспективті жетілдіру.....	69
Жайынбаева С.К., Майматаева А.Д., Қосауова А.К. «Төңкерілген сынып» технологиясы негізінде болашақ биология мұғалімінің кәсіби құзыреттілігін қалыптастыру.....	87
Жамбылқызы М., Байбосынова Т., Алейшо М. Action research әдісін ағылшын тілі мұғалімдерінің кәсіби дамуына қолдану.....	102
Жарылғапова Д.М., Қарабала Т.М., Пірмағанбет А.Е. Мобильді қосымшалар арқылы физиканы оқытуда оқушылардың пәнге қызығушылығын және интеллектуалды қабілеттерін арттыру.....	116
Иманғалиева Б., Ермаханов М., Алдиярова А. Ерекше білім беруге қажеттіліктері бар оқушыларға химияны оқыту әдістемесі: қазақ орта мектебінің практикасы.....	133
Каженова Ж.С., Рахматуллина З.Т. Білім беру робототехникасына арналған жинақтарды қолдану арқылы оқу үрдісін ұйымдастыру.....	151
Қазбай П.А., Құдайбергенова К.Т. Қазақ эпостарындағы «қаһарман-қыздар» бейнесін жоғары оқу орнында сыни ойлау технологиясы арқылы оқыту.....	174
Кайсарова А.С., Женсикбаева Н.Ж., Сабырбаева Б.Т. Өлкетану – оқушы тұлғасын әлеуметтендіру құралы ретінде.....	187

Медеубаева К.Т., Хасанова И.У., Сейтенова С.С. Жасанды интеллекттің болашақ мұғалімдерді дайындаудың білім беру траекторияларын дербестендірудегі әлеуеті: Қазақстан тәжірибесі.....	204
Нәби Н.Б., Рахметова Р.С. 4К моделінің қатысымдық дағдыны қалыптастырудағы маңызы және оның концептуалдық негізі.....	222
Нуржанова А.Р., Жусупова Р.Ф., Яленяускене Э. Білім берудегі жасанды интеллект: жасанды интеллект негізіндегі білім беру платформаларын бағалау.....	238
Нуризинова М.М., Баймуханбетов Б.М., Исаев М.С. Білім алушылардың икемді дағдыларын (soft skills) дамыту: теориялық тәсілдердің әсерін зерттеу.....	259
Нұрлан М.Н., Бакырджы Н., Әден Ж.Ш. Жыр жанрын жаңа технологиялар көмегімен оқытудың маңызы.....	275
Орынбасар Т.О., Амирбекова А.Б. Жазушы тезаурусы және көркем әдебиет стилін оқыту әдістемесі: PRISMA әдісімен жасалған систематикалық шолу.....	295
Пернебаева Ф.С., Бакеш З.О., Калымбетова А.А. Биологияны оқытуда инновациялық құзыреттілікті қалыптастыру жолдары.....	319
Сейтбекова Г.О., Кокажаева А.Б., Сүлейменқұлова Г.Т. Оқушылардың математикалық функционалдық сауаттылығын қаржылық мазмұндағы мәтіндік есептерді шешу арқылы дамыту және бағалау.....	338
Семенихина С.Ф., Семенихин В.В. Тұтас педагогикалық үдерісте "мектеп – жоғары оқу орны – ғылым-өндіріс" альянсын енгізуді зерттеу бойынша шолу.....	362
Сматова К.Б., Алимбаева С.К., Оспанбаева М.П. Мектепке даярлық диагностикасын сандық форматқа ауыстыру үрдісін.....	378
Токтагулова У.С., Карменова Н.Н., Садыкова Д.А. Оқу-далалық практиканың теориялық білімді дамытудағы рөлі мен тиімділігін анықтауда білім алушылардың түсініктерін қалыптастыру.....	396
Уалиханова А., Абуов А.Е., Болысбаев Д.С. Балалардың рухани құндылықтарын қалыптастыруда аула клубтарының рөлін зерттеуге әдіснамалық тұғырлар.....	417

Усманова Х., Стычева О.

Ресми бизнес стилін болашақ орыс тілі мұғалімдерін кәсіби дайындау құралы ретінде оқу үрдісінде пайдалану.....433

Хасенова М.Т., Смагулов М.З.

Кедергісіз химия: сыныпта инклюзивті оқытудың стратегиялары.....455

ЭКОНОМИКА**Абдуллаев А.М., Қадырова М.Б., Құралбаев А.А.**

Жергілікті өзін-өзі басқару жүйесіндегі кадрларды басқару: кәсіби құзыреттерді дайындау және дамыту.....477

Аманбай А., Рахимбердинова М.У., Массанова Л.Е.

Қазақстан Республикасындағы тұрғын үй құрылысы нарығының дамуын талдау.....505

Аманғожаева А.Б., Ақпанов А.К., Қасымбекова Г.Р.

Қазақстанның банк секторының осалдық детерминанттары: нарықтық, кредиттік және өтімділік тәуекелдерін көпәдісті талдау.....523

Бейсенбаева А., Ерназарова У., Турдалиева У

ESG тәуекелдерін ескере отырып ішкі бақылаудың тиімділігін бағалау: Қазақстан банк секторы үшін модель.....539

Домалатов Е.Б., Абылайханова Т.А.

Нейрондық желілер адами капиталды басқарудың тиімділігін арттыру құралы ретінде: эмпирикалық талдау және болжамды модельдеу.....554

Елтай Б.Б., Азатбек Т.А.

Түсті металдарға әлемдік бағалардың өзгерісінің Қазақстанның түсті металлургиясының экспорттық динамикасына әсерін бағалау.....569

Елшибекова К.Ж., Ералина Э.М.

Қазақстан өнеркәсібіндегі отандық робототехникалық кешендердің бәсекелестік артықшылықтары.....592

Ендыбаев С.Т., Жусипова Э.Е., Дүйсенбекұлы А.-х.

Қазақстанда қаржылық ақпарат шектеулі жағдайда стартаптардың құнын бағалау әдістемелерін бейімдеу.....613

Еримпашева А., Тарақбаева Р., Люй Ч.

Қазақстан мен Қытай арасындағы инвестициялық өзара іс-қимыл трансконтиненталдық көлік дәліздерін қалыптастыру факторы ретінде.....631

Жумалдинова Д., Ешенкулова Г., Wronka-Pośpiech M.

Креативті индустрия стартаптарындағы жана әдістер мен технологиялар: конфигурациялық шолу.....647

Қадырбекова Д.С., Климова Т.Б., Дүйсеннова Р.Ж. Қазақстандағы халықаралық туризм: шетелдік туристерді тарту факторлары және ел брендин күшейту мүмкіндіктері.....	664
Қадырова К., Давлетова М., Амиргалиева А. Қазақстандағы шағын және орта бизнестің цифрлық трансформация жағдайындағы маркетингтік стратегиялары.....	681
Кальбаева Н.Т., Сатенов Б.И., Хасенова Л.А. Қаржылық факторлардың түркістан облысындағы ет өндірісін экспорттық дамуына әсері: сценарийлік тәсіл.....	699
Каримова Б., Касенова Г., Супугалиева Г. Қазақстанның қор нарығындағы қаржы құралдарының құбылмалылығы: өлшеу және болжау.....	722
Қожахметова Ә.К., Есмұрзаева А.Б., Анархан А.Қ. Жасыл энергетика жобаларының тиімділігін интегралды ESG-бағалау: экономикалық, әлеуметтік және экологиялық аспектілер.....	741
Құралбаева А.Ш., Исаева Г.К., Махатова А.Б. Финтех-инструменттер Қазақстанның ауылдық өңірлерінің тұрақты дамуына инвестицияларды ынталандыру механизмі ретінде.....	767
Мелдебекова А., Канабекова М., Азбергенова Р. Қазақстанның жоғары біліміндегі инновацияларды басқару: индикаторлар және модельдер.....	783
Молдажанов М.Б., Тахтаева Р.Ш., Дюсембинова Ж.С. Семей ядролық қауіпсіздік аймағы мен Курчатов қаласындағы экономикалық қызметтің Семей сынақ полигоны ядролық туризмінің дамуына әсері.....	807
Нұрбатсын А., Киреева А.А. Жоғары білім сапасын арттыру құралы ретіндегі цифрлық технологиялар.....	829
Нурбекова Ш.К., Есімжанова С.Р., Алимжанова Л.М. Цифрландыру негізінде ерекше экономикалық аймақтардағы көлік-логистикалық қызметтерді басқарудың тиімділігін арттыру.....	851
Нұрмұханова Г.Ж., Абжатова А.К., Құрманғалиева А.К. Қазақстанда еңбек нарығы мен жоғары білімнің өзара байланысы: үрдістері мен даму бағыттары.....	875
Полежаева И.С., Суюндиков А.С., Стаценко О.А. Қазақстан Республикасының энергетика саласының экономикалық тиімділігін арттыруға цифрландырудың әсері.....	892

Разакова Д.И., Алшанов Р.А., Қазыбаева М.Н.

Қазақстан өнеркәсібінің цифрлық трансформациясы: кәсіпорындардың дайындығы мен енгізу барьерлерінің эмпирикалық талдауы.....916

Сагиндыкова Г.М., Тусибаева Г.С., Балгинова К.М.

Қатысушылардың әлеуметтік жауапкершілігі мен уәждемесін қалыптастырудың инновациялық стратегиялары цифрландыру жағдайында
ҚР зейнетақы жүйесі.....935

Садықов Е.Т., Жамкеева М.К., Конырбеков М.Ж.

Қазақстан экономикасындағы үстеме бағалардың құрылымы және оның инфляциялық үрдістерге ықпалы.....955

СОДЕРЖАНИЕ

ПЕДАГОГИКА

Абуова Б.П., Абишева С.Д., Адибаева Ш.Т. Методический потенциал детской литературы Казахстана в образовательном процессе на примере «казахстанских сказок» Юрия Серебрянского.....	19
Азыбаев М., Жайдакбаева Л.К. Педагогические и технологические аспекты реализации смешанного синхронного обучения.....	38
Базарбаева А.Н., Мубаракوف А.М., Ибадулла С.Н. Методические основы использования современных цифровых инструментов в преподавании изобразительного искусства.....	55
Ерболатов Н.Н., Токтаганова Г.Б., Назарова Г.А. Диагностика результатов обучения магистрантов на основе интеграции образования, науки и производства и перспектив совершенствования.....	69
Жайынбаева С.К., Майматаева А.Д., Косауова А.К. Формирование профессиональной компетентности будущих учителей биологии на основе технологии «перевернутый класс».....	87
Жамбылқызы М., Байбосынова Т., Алейшо М. Использование Action Research как метод профессионального развития преподавателей английского языка.....	102
Жарылгапова Д.М., Карабала Т.М., Пирмаганбет А.Е. Повышение интереса и интеллектуальных навыков студентов при преподавании физики через мобильные приложения.....	116
Имангалиева Б., Ермаханов М., Алдиярова А. Методика преподавания химии для учащихся с особыми образовательными потребностями: практика казахской средней школы.....	133
Каженова Ж.С., Рахматуллина З.Т. Организация образовательного процесса с использованием комплектов для образовательной робототехники.....	151
Казбай П.А., Кудайбергенова К.Т. Обучение образу "героини-девушки" в казахских эпосах в вузе по технологии критического мышления.....	174
Кайсарова А.С., Женсикбаева Н.Ж., Сабырбаева Б.Т. Краеведение как средство социализации личности учащегося.....	187

Медеубаева К.Т., Хасанова И.У., Сейтенова С.С. Потенциал искусственного интеллекта в персонализации образовательных траекторий подготовки будущих учителей: опыт Казахстана.....	204
Наби Н.Б., Рахметова Р.С. Значение модели 4К в формировании коммуникативных навыков и ее концептуальная основа.....	222
Нуржанова А.Р., Жусупова Р.Ф., Яленяускене Э. Искусственный интеллект в образовании: оценка образовательных платформ на основе ии.....	238
Нуризинова М.М., Баймуханбетов Б.М., Исаев М.С. Развитие гибких навыков (soft skills) у обучающихся: исследование влияния теоретических подходов.....	259
Нурлан М.Н., Бакырджы Н., Аден Ж.Ш. Актуальность преподавания жанра жыр с использованием инновационных технологий.....	275
Орынбасар Т.О., Амирбекова А.Б. Тезаурус писателя и методика обучения художественному стилю литературы: систематический обзор по методу PRISMA.....	295
Пернебаева Ф.С., Бакеш З.О., Калымбетова А.А. Важность использования технологий искусственного интеллекта при изучении языка.....	310
Сейтбекова Г.О., Кокажаева А.Б., Сулейменкулова Г.Т. Развитие и оценка математической функциональной грамотности учащихся через решение текстовых задач финансового содержания.....	338
Семенихина С.Ф., Семенихин В.В. Обзор по исследованию внедрения альянса «школа – вуз – наука – производство» в целостном педагогическом процессе.....	362
Сматова К.Б., Алимбаева С.К., Оспанбаева М.П. Исследование трансформации диагностики готовности к школе в цифровой формат.....	378
Токтагулова У.С., Карменова Н.Н., Садыкова Д.А. Формирование представлений обучающихся об определении роли и эффективности учебно-полевой практики в развитии теоретических знаний.....	396
Уалиханова А., Абуов А.Е., Болысбаев Д.С. Методологические подходы к изучению роли дворовых клубов в формировании духовных ценностей детей.....	417

Усманова Х., Стычева О.

Использование официально-делового стиля в образовательном процессе как средство профессиональной подготовки будущих учителей русского языка.....433

Хасенова М.Т., Смагулов М.З.

Химия без барьеров: стратегии инклюзивного обучения в классе.....455

ЭКОНОМИКА**Абдуллаев А.М., Кадырова М.Б., Куралбаев А.А.**

Управление кадрами в системе местного самоуправления: подготовка и развитие профессиональных компетенций.....505

Аманбай А., Рахимбердинова М.У., Массанова Л.Е.

Анализ развития рынка жилищного строительства в Республике Казахстан.....523

Амангожаева А.Б., Акпанов А.К., Касымбекова Г.Р.

Детерминанты уязвимости банковского сектора казахстана: многометодный анализ рыночных, кредитных и ликвидных рисков.....523

Бейсенбаева А., Ерназарова У., Турдалиева У.

Оценка эффективности внутреннего контроля с учётом ESG-рисков: модель для банковского сектора Казахстана.....539

Домалатов Е.Б., Абылайханова Т.А.

Нейросети как инструмент повышения эффективности управления человеческим капиталом: эмпирический анализ и предиктивное моделирование.....554

Елтай Б.Б., Азатбек Т.А.

Оценка влияния изменений мировых цен на цветные металлы на экспортную динамику цветной металлургии Казахстана.....569

Елшибекова К.Ж., Ералина Э.М.

Конкурентные преимущества отечественных робототехнических комплексов в промышленности Казахстана.....592

Ендыбаев С.Т., Жусипова Э.Е., Дуйсенбекұлы А.-Х.

Адаптация методологий оценки стоимости стартапов в Казахстане в условиях ограниченной финансовой информации.....613

Еримпашева А., Таракбаева Р., Люй Ч.

Инвестиционное взаимодействие Казахстана и Китая как фактор формирования трансконтинентальных транспортных коридоров.....631

Жумалдинова Д., Ешенкулова Г., Wronka-Pośpiech M.

Новые методы и технологии в стартапах креативной индустрии: конфигурационный обзор.....647

Кадырбекова Д.С., Климова Т.Б., Дүйсеннова Р.Ж. Международный туризм в Казахстане: факторы привлечения иностранных туристов и возможности усиления бренда страны.....	664
Кадырова К., Давлетова М., Амиргалиева А., Стратегии малого и среднего бизнеса Казахстана в условиях цифровой трансформации.....	681
Кальбаева Н.Т., Сатенов Б.И., Хасенова Л.А. Влияние финансовых детерминант на экспортное развитие мясного производства в Туркестанской области: сценарный подход.....	699
Каримова Б., Касенова Г., Супугалиева Г. Волатильность финансовых инструментов на фондовом рынке Казахстана: измерение и прогнозирование.....	722
Кожаметова А.К., Есмурзаева А.Б., Анархан А.К. Интегральная ESG-оценка эффективности проектов зеленой энергетики: экономический, социальный и экологический аспекты.....	741
Куралбаева А.Ш., Исаева Г.К., Махатова А.Б. Финтех-инструменты как механизм стимулирования инвестиций в устойчивое развитие сельских регионов Казахстана.....	767
Мелдебекова А., Канабекова М., Азбергенова Р. Управление инновациями в высшем образовании Казахстана: индикаторы и модели.....	783
Молдажанов М.Б., Тахтаева Р.Ш., Дюсембинова Ж.С. Влияние экономической деятельности в семипалатинской зоне ядерной безопасности и городе Курчатова на развитие ядерного туризма СИП.....	807
Нурбатсын А., Киреева А.А. Цифровые технологии как инструмент повышения качества высшего образования.....	829
Нурбекова Ш.К., Есимжанова С.Р., Алимжанова Л.М. Повышение эффективности управления транспортно-логистическими услугами в особых экономических зонах на основе цифровизации.....	851
Нурмуханова Г.Ж., Абжатова А.К., Курмангалиева А.К. Взаимосвязь рынка труда и высшего образования в Казахстане: тенденции и направления развития.....	875
Полежаева И.С., Суюндикиев А.С., Стаценко О.А. Влияние цифровизации на повышение экономической эффективности энергетической отрасли Республики Казахстан.....	892

Разакова Д.И., Алшанов Р.А., Казыбаева М.Н.

Цифровая трансформация промышленности Казахстана: эмпирический анализ готовности предприятий и барьеров внедрения.....916

Сагиндыкова Г.М., Тусибаева Г.С., Балгинова К.М.

Инновационные стратегии для формирования социальной ответственности и мотивации участников пенсионной системы РК в условиях цифровизации.....935

Садыков Е.Т., Жамкеева М.К., Конырбеков М.Ж.

Структура наценок в экономике Казахстана и ее влияние на инфляционные процессы.....955

SCIENTIFIC JOURNAL OF PEDAGOGY AND ECONOMICS

ISSN 1991-3494

Volume 1.

Number 419 (2026), 647-663

<https://doi.org/10.32014/2026.2518-1467.1128>

UDC 658.1:005.7:004

IRSTI 06.81.12

© **Zhumaldinova D.**^{1*}, **Yeshenkulova G.**¹, **Wronka-Pośpiech M.**², 2026.

¹Astana IT University, Astana, Kazakhstan;

²University of Economics in Katowice, Katowice, Poland.

E-mail: d.zhumaldinova@astanait.edu.kz,

EMERGING METHODOLOGIES AND TECHNOLOGIES IN CREATIVE STARTUPS: A CONFIGURATIONAL REVIEW

Zhumaldinova Dina — Doctoral Student, School of Digital Public Administration, Astana IT University, Astana, Kazakhstan,

E-mail: d.zhumaldinova@astanait.edu.kz, <https://orcid.org/0000-0002-5734-0562>;

Yeshenkulova Gaukhar — PhD, Professor, School of Digital Public Administration, Astana IT University, Astana, Kazakhstan,

E-mail: gaukhar.yeshenkulova@astanait.edu.kz, <https://orcid.org/0000-0002-2460-5499>;

Wronka-Pośpiech Martyna — PhD, Associate Professor, Department of Entrepreneurship and Management Innovation, University of Economics in Katowice, Katowice, Poland,

Email: martyna.wronka-pospiech@uekat.pl, <https://orcid.org/0000-0001-9240-6670>.

Abstract: In the context of accelerating digitalization and the rapid growth of creative-technology startups, both entrepreneurial methodologies and mechanisms for applying technological tools in the innovation process are undergoing significant transformation. The emergence of hybrid business models based on the synergy between creativity and digital technologies requires a reconsideration of traditional approaches to startup creation and scaling. The aim of this article is to identify patterns of interaction between entrepreneurial methodologies (Lean Startup, Design Thinking, Effectuation, iterative and adaptive approaches), technological innovations (digital transformation, artificial intelligence, neural networks, user content analytics), and the specific features of the creative-IT context in startup development, based on a thematic and configurational review of studies published in 2020–2025. The research methodology includes a purposive qualitative selection of 15 peer-reviewed publications from international databases, thematic analysis following the Braun and Clarke protocol, and configurational analysis based on QCA logic. This approach enabled the identification of stable M–T–C configurations (methodology–technology–context) and the description of equifinal trajectories of innovative growth. An additional interpretative systematization of identified patterns was conducted to achieve conceptual generalization. The

findings demonstrate that innovation in creative-technology startups primarily emerges from combinations of methodological and technological elements rather than isolated factors. Technological tools act as methodological accelerators by reinforcing feedback loops, experimentation cycles, and hypothesis testing, while the creative-IT context generates conditions of high uncertainty, product hybridization, and dependence on digital ecosystems. The identified configurations reveal multiple equivalent pathways to achieving sustainability and scalability. The scientific contribution of the article lies in the development of the CISMI-2025 conceptual model, which integrates methodological, technological, and contextual parameters into a unified analytical framework. The results may be applied in the design of acceleration programs, public support instruments, corporate innovation strategies, and educational courses in technological entrepreneurship.

Keywords: startups, technological innovation, entrepreneurial methodologies, artificial intelligence, creative industries, IT entrepreneurship

For citations: Zhumaldinova D., Yeshenkulova G., Wronka-Pośpiech M. Emerging methodologies and technologies in creative startups: a configurational review. Scientific Journal of Pedagogy and Economics, 2026. — No.1. — Pp. 647-663. DOI: <https://doi.org/10.32014/2026.2518-1467.1128>

© Жумалдинова Д. ^{1*}, Ешенкулова Г. ¹, Wronka-Pośpiech M. ², 2026.

¹ Astana IT University, Астана, Қазақстан;

² University of Economics in Katowice, Katowice, Poland.

E-mail: d.zhumaldinova@astanait.edu.kz

КРЕАТИВТІ ИНДУСТРИЯ СТАРТАПТАРЫНДАҒЫ ЖАҢА ӘДІСТЕР МЕН ТЕХНОЛОГИЯЛАР: КОНФИГУРАЦИЯЛЫҚ ШОЛУ

Жумалдинова Дина — докторант, Цифрлық мемлекеттік басқару мектебі, Astana IT University, Астана, Қазақстан,

E-mail: d.zhumaldinova@astanait.edu.kz, <https://orcid.org/0000-0002-5734-0562>;

Ешенкулова Гаухар — PhD, профессор, Цифрлық мемлекеттік басқару мектебі, Astana IT University, Астана, Қазақстан,

E-mail: gaukhar.yeshenkulova@astanait.edu.kz, <https://orcid.org/0000-0002-2460-5499>;

Wronka-Pośpiech Martyna — PhD, қауымдастырылған профессор, Кәсіпкерлік және басқарушылық инновациялар кафедрасы, University of Economics in Katowice, Катовице, Польша,

Email: martyna.wronka-pospiech@uekat.pl, <https://orcid.org/0000-0001-9240-6670>.

Аннотация: Экономиканың жедел цифрлануы және креативті-технологиялық стартаптардың қарқынды өсуі жағдайында кәсіпкерлік әдіснамалар да, инновациялық процесте технологиялық құралдарды қолдану тетіктері де елеулі трансформацияға ұшырауда. Креативтілік пен цифрлық технологиялардың синергиясына негізделген гибриді бизнес-модельдердің

қалыптасуы стартаптарды құру мен масштабтаудың дәстүрлі тәсілдерін қайта қарауды талап етеді. Мақаланың мақсаты - 2020–2025 жылдар аралығындағы зерттеулерге тақырыптық және конфигурациялық шолу негізінде кәсіпкерлік әдіснамалар (Lean Startup, Design Thinking, Effectuation, итеративті және адаптивті тәсілдер), технологиялық инновациялар (цифрлық трансформация, жасанды интеллект, нейрондық желілер, пайдаланушы контентін талдау) және креативті-IT контекстінің стартаптардың дамуындағы өзара әрекеттесу заңдылықтарын анықтау. Зерттеу әдіснамасы халықаралық деректер базаларынан іріктелген 15 рецензияланған жарияланымды мақсатты сапалық талдауды, Braun and Clarke протоколы бойынша тақырыптық талдауды және QCA логикасына негізделген конфигурациялық талдауды қамтиды. Бұл тәсілдер тұрақты M–T–C конфигурацияларын (әдіснама–технология–контекст) айқындауға және инновациялық өсудің эквивианалды траекторияларын сипаттауға мүмкіндік берді. Сонымен қатар, анықталған үлгілерді концептуалдық тұрғыдан жалпылау мақсатында интерпретациялық жүйелеу жүргізілді. Нәтижелер креативті-технологиялық стартаптардағы инновациялар жекелеген факторлардың әсерінен емес, әдіснамалық және технологиялық элементтердің үйлесімі негізінде қалыптасатынын көрсетеді. Технологиялық құралдар кері байланыс, эксперимент және гипотезаларды тестілеу циклдерін күшейте отырып, әдіснамалық жеделдеткіштер рөлін атқарады, ал креативті-IT контекст жоғары белгісіздік, өнімдердің гибридтенуі және цифрлық экожүйелерге тәуелділік жағдайларын қалыптастырады. Анықталған конфигурациялар тұрақтылық пен масштабталуға қол жеткізудің бірнеше тең мәнді жолдарының бар екенін дәлелдейді. Мақаланың ғылыми жаңалығы әдіснамалық, технологиялық және контекстуалдық параметрлерді біртұтас аналитикалық шеңберге біріктіретін CISMI-2025 тұжырымдамалық моделін әзірлеуде көрінеді. Алынған нәтижелер акселерациялық бағдарламаларды, мемлекеттік қолдау құралдарын, корпоративтік инновациялық стратегияларды және технологиялық кәсіпкерлік бойынша білім беру курстарын жобалауда қолданылуы мүмкін.

Түйін сөздер: стартаптар, технологиялық инновациялар, кәсіпкерлік қызмет әдістері, жасанды интеллект, креативті индустрия, IT-кәсіпкерлік

© Жумалдинова Д.^{1*}, Ешенкулова Г.¹, Wronka-Pośpiech M.², 2026.

¹Astana IT University, Астана, Қазақстан;

² University of Economics in Katowice, Katowice, Poland.

E-mail: d.zhumaldinova@astanait.edu.kz

НОВЫЕ МЕТОДЫ И ТЕХНОЛОГИИ В СТАРТАПАХ КРЕАТИВНОЙ ИНДУСТРИИ: КОНФИГУРАЦИОННЫЙ ОБЗОР

Жумалдинова Дина — докторант, Школа цифрового государственного управления, Astana IT University, Астана, Қазақстан,

E-mail: d.zhumaldinova@astanait.edu.kz, <https://orcid.org/0000-0002-5734-0562>;

Ешенкулова Гаухар — PhD, профессор, Школа цифрового государственного управления, Astana IT University, Астана, Казахстан,

E-mail: gaukhar.yeshenkulova@astanait.edu.kz, <https://orcid.org/0000-0002-2460-5499>;

Wronka-Pośpiech Martyna — PhD, Ассоциированный профессор Кафедры предпринимательства и управленческих инноваций, University of Economics in Katowice, Катовице, Польша,

Email: martyna.wronka-pospiech@uekat.pl, <https://orcid.org/0000-0001-9240-6670>.

Аннотация: В условиях ускоряющейся цифровизации экономики и интенсивного роста креативно-технологических стартапов существенно трансформируются как предпринимательские методологии, так и механизмы использования технологических инструментов в инновационном процессе. Формирование гибридных бизнес-моделей, основанных на синергии креативности и цифровых технологий, требует переосмысления традиционных подходов к созданию и масштабированию стартапов. Цель статьи - на основе тематического и конфигурационного обзора исследований 2020–2025 гг. выявить закономерности взаимодействия предпринимательских методологий (Lean Startup, Design Thinking, Effectuation, итеративные и адаптивные подходы), технологических инноваций (цифровая трансформация, искусственный интеллект, нейронные сети, аналитика пользовательского контента) и особенностей креативно-ИТ контекста в развитии стартапов. Методология исследования включает целенаправленный качественный отбор 15 рецензируемых публикаций из международных баз данных, тематический анализ по протоколу Braun and Clarke и конфигурационный анализ на основе логики QCA, что позволило выявить устойчивые M–T–C конфигурации (методологии–технологии–контекст) и описать эквивалентные траектории инновационного роста. Дополнительно проведена интерпретационная систематизация выявленных паттернов с целью концептуального обобщения. Результаты показывают, что инновации в креативно-технологических стартапах формируются преимущественно за счёт сочетаний методологических и технологических элементов, а не под воздействием изолированных факторов. Технологические инструменты выступают методологическими ускорителями, усиливая циклы обратной связи, экспериментов и тестирования гипотез, тогда как креативно-ИТ контекст задаёт условия высокой неопределённости, гибридизации продуктов и зависимости от цифровых экосистем. Выделенные конфигурации демонстрируют наличие нескольких равноценных путей достижения устойчивости и масштабируемости. Научный вклад статьи заключается в разработке концептуальной модели CSMI-2025, интегрирующей методологические, технологические и контекстуальные параметры в единую аналитическую рамку. Практическая значимость результатов состоит в возможности их использования при проектировании акселерационных программ, инструментов государственной поддержки, корпоративных инновационных стратегий и образовательных курсов по технологическому предпринимательству.

Ключевые слова: стартапы, технологические инновации, методы предпринимательской деятельности, искусственный интеллект, креативные индустрии, IT-предпринимательство

Introduction. Over the past decade, the creative economy has become one of the fastest-growing segments of the global economy. Recent international reports estimate that cultural and creative industries generate around US\$2.3 trillion in annual revenues and contribute approximately 3.1% of global GDP, while accounting for about 6.2% of global employment. At the same time, the digital economy is expanding rapidly and is projected to reach about 17% of global GDP by 2028, driven by widespread digitalization, phantomization and AI diffusion. These two dynamics intersect in a distinctive segment of ventures: creative industry startups with strong IT and technological components, which combine cultural or aesthetic value creation with digital tools, platforms and data-driven technologies.

Literary review. Such creative IT startups do not merely commercialize cultural content or creative services. They also experiment with digital platforms, algorithmic recommendation systems, AI-enhanced production tools, user-generated content (UGC) analytics and other forms of technological innovation (Saura et al., 2021; Kostis et al., 2024). Their success therefore depends not only on access to resources, markets and ecosystems, but also on the entrepreneurial methodologies and technological logics through which decisions are made, opportunities are identified and business models are iteratively refined (Ousghir and Daoud, 2022; Aulia et al., 2024; Centobelli et al., 2022).

A growing body of research examines startup ecosystems (Cavallo et al., 2019; Stam and Van de Ven, 2021), technological innovation in new ventures (Centobelli et al., 2022; Hai and Tuyet, 2025) and entrepreneurial methodologies such as Lean Startup, Effectuation and Design Thinking (Ries, 2011; Sarasvathy, 2001; Patil and Patil, 2024). However, most studies focus on one of these domains in isolation: either they analyze ecosystem conditions and policy instruments, or they discuss methodologies and entrepreneurial cognition, or they explore technological innovation practices such as digital transformation or AI adoption in startups. Integrated analyses that explicitly connect (1) entrepreneurial methodologies, (2) technological innovation, and (3) the specific context of creative IT startups in the creative industries remain comparatively rare (Jha and A., 2024; Tanveer et al., 2024; Mai and Nguyen, 2023).

This fragmentation is particularly problematic for creative industry IT startups, which often combine experimental business models, non-scalable creative or cultural work and high technological and market uncertainty. On the one hand, these ventures operate in markets where demand is symbolic, taste-driven and unstable, and where value is co-constructed with audiences and communities (Jha et al., 2024). On the other hand, they are embedded in rapidly changing digital infrastructures, where AI, data analytics and platform dynamics reshape how audiences are reached, how

content is monetized and how creative products evolve (Saura et al., 2021; Kostis et al., 2024). As a result, methodological choices for example, whether to follow a Lean Startup logic of hypothesis-driven experimentation, an Effectuation logic of means-driven action, or a Design Thinking logic of human-centered co-creation become deeply intertwined with technological choices such as adopting generative AI, algorithmic curation or UGC-based analytics.

The COVID-19 pandemic and subsequent macroeconomic turbulence further intensified these pressures. Creative sectors were among the most negatively impacted by lockdowns and demand shocks, yet at the same time many creative IT startups accelerated digital transformation, experimented with hybrid formats and adopted new technological tools to survive and adapt (Tanveer et al., 2024). In this environment, it is no longer sufficient to ask whether creative and IT startups use methods or technologies; it becomes crucial to understand which types of technological innovations are most widely used, and which management and entrepreneurial methodologies dominate in creative IT startup practice.

Against this backdrop, the present article focuses specifically on IT startups operating within the broader creative industries (hereafter: creative IT startups). It adopts a configurational literature review perspective, understood as a form of qualitative review that synthesizes prior studies not by single variables, but by identifying recurring configurations – that is, combinations of conditions and mechanisms – that are associated with outcomes (Ragin, 2008; Fiss, 2011). In our case, the review examines how different types of technological innovation and different entrepreneurial/management methodologies co-occur across recent research on creative IT startups and their ecosystems.

Methodologically, the article draws on a targeted qualitative selection of 15 peer-reviewed articles published between 2020 and 2025, followed by thematic analysis and configurational reasoning. Thematic analysis is implemented using the widely adopted Braun and Clarke (2006) framework, which provides a transparent and flexible procedure for identifying, reviewing and defining themes across qualitative data. Configurational reasoning, inspired by Qualitative Comparative Analysis (QCA), is then used to map how methodological and technological elements combine across the selected studies to form patterns that can be interpreted as configurations of practice (Ragin, 2008; Fiss, 2011; Utomo et al., 2025).

The choice of the 2020–2025 period is theoretically and empirically justified by three interrelated transformations. First, the COVID-19 pandemic introduced an exogenous shock that profoundly reshaped creative industries, forcing startups to rapidly adopt digital tools, remote production models and platform-based distribution channels. Second, the post-pandemic recovery phase has been marked by accelerated digital transformation, ecosystem restructuring and changing patterns of consumer behavior in creative and cultural markets. Third, this period coincides with the rapid diffusion of artificial intelligence, generative AI and data analytics into entrepreneurial practice, fundamentally altering how opportunities

are identified, tested and scaled. As a result, the 2020–2025 timeframe represents a critical phase of methodological and technological reconfiguration in creative IT startup ecosystems, making it particularly suitable for a configurational review.

In line with the comments of reviewers and the focus of the journal, the study concentrates on two overarching research questions:

RQ1. Which types of technological innovations are most frequently used in creative industry startup ecosystems, particularly in relation to creative IT startups?

RQ2. Which management and entrepreneurial methodologies are most widely adopted by creative IT startups?

By addressing these questions, the article pursues three main contributions. First, it systematizes and maps the types of technological innovations that appear most frequently in the recent literature on creative industry startup ecosystems, including digital transformation, AI tools, data analytics and UGC-based systems. Second, it synthesizes evidence on the entrepreneurial and management methodologies used by creative IT startups, such as Lean Startup, Effectuation and Design Thinking, showing how these approaches are adapted to high-uncertainty creative contexts. Third, by adopting a configurational literature review, it offers an integrative perspective that highlights how technological innovations and methodologies tend to appear in specific combinations in the observed ecosystems, thereby providing a conceptual basis for the CISMI-2025 model and for future empirical research on creative IT startup development.

Methods and materials. This study employs a qualitative configurational literature review that integrates thematic analysis with configuration-oriented reasoning. The configurational approach is conceptually grounded in the logic of QCA, which views outcomes as the product of multiple interacting conditions rather than single linear effects (Ragin, 2009; Fiss, 2011). This makes it well-suited to the domain of creative IT startups, where innovation practices, entrepreneurial methodologies and technological tools co-evolve within uncertain and rapidly changing environments.

To move beyond purely thematic aggregation and to capture the complexity of interactions between methodologies, technologies and contextual conditions, this study adopts a configurational literature review logic. Configurational reviews are grounded in the idea that social and entrepreneurial phenomena are best explained not by single variables, but by combinations of conditions that jointly produce outcomes (Ragin, 2009; Fiss, 2011). Unlike traditional systematic literature reviews that focus on identifying dominant factors and linear relationships, configurational reviews aim to uncover equifinal patterns, where different combinations of elements can lead to similar outcomes.

In the context of entrepreneurship and innovation research, configurational approaches are increasingly used to examine how multiple dimensions such as strategies, technologies and ecosystem conditions interact in shaping firm behavior and performance (Fiss, 2011; Utomo et al., 2025). Thus, the configurational

literature review enables a more nuanced synthesis of the reviewed studies by identifying recurring methodological–technological–contextual configurations, rather than isolated best practices.

The review draws on a targeted selection of peer-reviewed journal articles published between 2020 and 2025. Search was conducted in Scopus and Web of Science using combinations of terms related to technological innovation (e.g., digital transformation, AI tools, data analytics, UGC-based analytics), entrepreneurial methodologies (e.g., Lean Startup, Effectuation, Design Thinking, iterative approaches), and creative IT startup contexts. Only English-language, peer-reviewed journal articles were included to ensure methodological transparency and conceptual rigor. An initial set of approximately 90 publications was screened by title, abstract and keywords. Through relevance-based refinement, a final sample of 15 studies was retained. Articles were included if they provided substantial insights into at least one of the core dimensions of interest: technological innovation in startup environments, entrepreneurial or managerial methodologies, or the contextual characteristics of creative industries and IT-driven startup ecosystems.

To make sense of this diverse corpus, the study applied thematic analysis using the six-phase protocol proposed by Braun and Clarke (2006). Full-text reading was followed by inductive coding aimed at capturing recurrent ideas and mechanisms relating to technological innovation, methodological practices, and creative IT startup dynamics. Codes were gradually refined and grouped into broader conceptual patterns, which then converted into two dominant thematic domains aligned with the research questions: (1) the types of technological innovations used in creative industry startup ecosystems; and (2) the entrepreneurial and managerial methodologies most widely adopted by creative IT startups. Thematic development was iterative and interpretive, with continuous revisiting of codes and themes to ensure internal coherence and analytic depth.

Building on these themes, a configurational analysis was conducted to examine how technological innovations and methodologies appear not only in isolation but also in combination. Each article was coded according to the presence or absence of technological innovation mechanisms (T) and entrepreneurial or managerial methodologies (M), along with its relevance to creative IT startup contexts (C). These binary indicators enabled the identification of recurring configurations across the sample – for example, studies focused on AI-assisted digital transformation with methodologically structured experimentation, or research highlighting creative-industry contexts where methodological practices operate without advanced technological tools. The aim of this analysis was not to produce formal QCA but rather to leverage configurational reasoning to reveal patterns of co-occurrence and interaction that deepen the understanding of technological and methodological dynamics within creative IT startup ecosystems.

Together, the thematic and configurational components of the review provide a structured basis for answering the two research questions and for identifying conceptual gaps and emerging directions in the study of creative IT startups.

Nonetheless, several limitations should be acknowledged. The review is restricted to English-language peer-reviewed journal articles, which may omit non-English or regionally specific scholarship. The configurational analysis remains interpretive rather than statistically calibrated. Finally, focusing specifically on creative IT startups allows for conceptual clarity but limits broader generalizability across other entrepreneurial domains.

Results. The thematic analysis conducted across the selected 15 studies revealed two dominant analytical domains that align directly with the research questions of this review: (1) technological innovations most frequently used in creative industry startup ecosystems, and (2) the management and entrepreneurial methodologies most adopted by creative IT startups. Although the studies vary in theoretical lenses and empirical settings, they display strong thematic convergence around these two domains, suggesting that technological and methodological dynamics have become central organizing mechanisms within contemporary creative IT entrepreneurship.

Table 1 – Thematic clusters identified in the review across technological, methodological, and contextual dimensions

Cluster	Description	Representative Studies
Technological Innovations	Digital transformation, AI tools, UGC analytics, data-driven decision systems used by creative IT startups	Centobelli et al. (2022); Kostis et al. (2024); Saura et al. (2021); Hai and Tuyet (2025); Flechas et al. (2022)
Entrepreneurial/ Managerial Methodologies	Lean Startup, Effectuation, Design Thinking, iterative strategies applied to navigate uncertainty	Ousghir and Daoud (2022); Patil and Patil (2024); Patil et al. (2023); Utomo et al. (2025); Cavallo et al. (2019)
Creative IT Contexts	Cultural, aesthetic and market-specific environments; creative clusters; symbolic uncertainty; ecosystem conditions	Jha and A. (2024); Tanveer et al. (2024); Mai and Nguyen (2023); Font-Cot et al. (2023); Aulia et al. (2024)

Note: Compiled by the authors

To structure the thematic results more clearly, the three dominant domains emerging from the dataset – technological innovations, entrepreneurial methodologies and creative IT contexts – are summarized in Table 1. These clusters represent the conceptual foundations from which the subsequent configurational patterns emerge.

Technological innovations in creative industry startup ecosystems (RQ1).

Across the reviewed studies, several forms of technological innovation appear consistently as central drivers of creative IT startup activity. Digital transformation emerges as a foundational mechanism enabling startups to redesign production processes, distribution channels and customer engagement systems (Centobelli et al., 2022; Hai and Tuyet, 2025). Artificial intelligence, particularly generative AI and machine learning tools, is increasingly integrated into business model experimentation, content creation, automated decision-making and data-driven opportunity identification (Kostis et al., 2024). Complementing AI, UGC analytics plays a significant role in market sensing and early-stage validation, especially



within creative sectors, where consumer preferences are rapidly shifting and culturally embedded (Saura et al., 2021). In several studies, digital platforms, cloud infrastructures and algorithmic recommendation systems also appear as enabling technologies that help startups scale creative products to broader audiences while reducing uncertainty (Jha and A., 2024; Font-Cot et al., 2023). Collectively, the evidence suggests that creative IT startups tend to rely on technologies that enhance experimentation, accelerate feedback cycles and support data-informed decision-making, reflecting broader global patterns of digitalization in creative industries.

Entrepreneurial and management methodologies used by creative IT startups (RQ2).

A second group of themes concerns the methodological approaches employed by creative IT startups in navigating uncertainty and innovation. The Lean Startup methodology is frequently referenced as a dominant logic for rapid experimentation, iterative prototyping and customer-oriented learning processes (Ousghir and Daoud, 2022; Patil and Patil, 2024). Design Thinking appears in studies that emphasize human-centered design, creative ideation and collaborative problem-solving elements particularly relevant to the cultural and aesthetic dimensions of creative industries (Patil et al., 2023; Jha and A., 2024). Effectuation, with its focus on means-driven action and adaptive decision-making under uncertainty, is highlighted in research examining entrepreneurial cognition in resource-constrained or highly ambiguous environments (Mai and Nguyen, 2023; Tanveer et al., 2024). Iterative strategies – including continuous refinement, learning-through-action and dynamic adjustment – represent a methodological bridge connecting Lean, Design Thinking and effectual logics, appearing across several empirical cases (Aulia et al., 2024; Utomo et al., 2025). Taken together, the findings indicate that creative IT startups tend to employ flexible, adaptive and learning-oriented methodological frameworks designed to support innovation in high-uncertainty creative ecosystems.

Cross-cutting patterns.

A key insight arising from the results is that technological innovations and methodological approaches rarely operate independently. Studies often describe creative IT startups as combining AI tools with structured experimentation or using digital transformation frameworks to support human-centered design processes or integrating UGC analytics into iterative learning cycles (Kostis et al., 2024; Saura et al., 2021). This interdependence suggests that in contemporary creative ecosystems, technology increasingly functions as an extension or even accelerator of entrepreneurial methodology. While the detailed combinational patterns are examined in the next section through configurational analysis, the thematic results already point toward a hybrid innovation logic: creative IT startups tend to succeed not because they adopt a single method or technology, but because they blend flexible methodologies with digitally enabled capabilities.

Overall, the results demonstrate that two domains – technological innovation and methodological orientation – form the conceptual foundation of current scholarship

on creative IT startups. Furthermore, thematic synthesis provides the groundwork for identifying more specific configurations of methodologies and technologies.

Configurational Analysis. To deepen the understanding of how methodological and technological elements interact within creative IT startup ecosystems, a configurational analysis was conducted building on the thematic findings and the M–T–C coding scheme described in the Methods section. This analytical step follows the logic of configurational reasoning, which views entrepreneurial outcomes as the result of interdependent combinations of conditions rather than isolated causal factors (Ragin, 2008; Fiss, 2011). Unlike formal QCA, the present analysis does not aim to calculate set-theoretic values but instead uses configurational logic to identify recurring patterns of co-occurrence across the selected studies.

Each article in the review was coded according to the presence or absence of three core dimensions: entrepreneurial or managerial methodologies (M), technological innovation mechanisms (T), and creative IT startup context relevance (C). This binary mapping provided a structured overview of the conceptual space addressed in the literature and enabled the identification of configurations-i.e., recurring M–T–C combinations that appear across empirical and conceptual studies. The resulting truth table demonstrates that several studies focus primarily on methodological dimensions without strong technological components, whereas others highlight advanced technological tools but make little reference to structured managerial methodologies. A third group of studies integrates both elements within explicitly creative industry and IT-driven contexts.

Table 2 – M–T–C coding of the reviewed studies (1 = present, 0 = absent)

Study	M	T	C	Notes
Ousghir and Daoud (2022)	1	0	0	Methodology-focused innovation design
Patil and Patil (2024)	1	0	0	Structured entrepreneurial methodology
Patil et al. (2023)	1	0	0	Design Thinking in early-stage learning
Centobelli et al. (2022)	0	1	0	Digital transformation taxonomy
Kostis et al. (2024)	0	1	1	AI + generative tools for experimentation
Saura et al. (2021)	0	1	1	UGC analytics for opportunity discovery
Hai and Tuyet (2025)	0	1	0	Digital transformation capability
Jha and A. (2024)	0	0	1	Creative incubation and creative industries
Tanveer et al. (2024)	1	0	1	Methodology and creative industry
Mai and Nguyen (2023)	1	0	1	Effectuation in creative startups
Font-Cot et al. (2023)	0	1	1	Urban creative hubs and innovation policy
Flechas et al. (2022)	1	1	1	Ecosystem support × technological maturity
Cavallo et al. (2019)	1	0	1	Ecosystem structures and entrepreneurial behaviour
Utomo et al. (2025)	1	0	1	Iterative learning in creative context
Aulia et al. (2024)	1	1	1	Iterative strategy enhanced by technology
Note: Compiled by the authors				

Table 2 presents the coding matrix used to identify recurring methodological (M), technological (T) and contextual (C) conditions across the reviewed studies.



This M–T–C structure provides the analytical basis for identifying higher-order configurations discussed later in this section.

An important observation across the dataset is that methodological and technological conditions rarely appear independently. Studies on digital transformation, AI adoption and UGC analytics frequently describe them as embedded within iterative or design-based methodological processes that shape how creative IT startups learn, experiment and pivot (Kostis et al., 2024; Saura et al., 2021). Conversely, research focusing on Lean Startup or Effectuation often emphasizes that methodological effectiveness is conditioned by access to digital infrastructures or emerging AI-driven tools (Ousghir and Daoud, 2022; Patil and Patil, 2024). Ecosystem-oriented studies extend this view by illustrating how contextual conditions in creative industries – such as cultural value logics, aesthetic uncertainty and audience-driven market dynamics – shape the interplay between methodologies and technologies (Cavallo et al., 2019; Stam and Van de Ven, 2021).

Table 3 – Recurring configurations of methodologies, technologies and contextual conditions in creative IT startup ecosystems

Configuration	M	T	C	Interpretation	Representative Studies
Conf. 1: Lean × Digital Transformation × Creative IT Context	11	11	11	Technology amplifies structured experimentation and enables rapid iteration in creative markets	Centobelli et al. (2022); Aulia et al. (2024)
Conf. 2: AI × Iterative Strategy × Creative Industries	11	11	11	AI accelerates learning cycles, supporting continuous refinement of creative digital products	Kostis et al. (2024); Saura et al. (2021)
Conf. 3: Methodology Only in Creative Contexts	11	00	11	Startups adapt through effectual or iterative logics without advanced technologies	Utomo et al. (2025); Tanveer et al. (2024); Mai and Nguyen (2023)
Conf. 4: Technology Only in Creative Contexts	00	11	11	Technological innovation shapes opportunity identification even without structured methodologies	Font-Cot et al. (2023); Hai and Tuyet (2025)
Conf. 5: Ecosystem-Supported Hybrid	11	11	00	Ecosystem resources substitute for contextual creative conditions, enabling hybrid innovation	Flechas et al. (2022); Cavallo et al. (2019)

Note: Compiled by the authors

Building on the coded data in Table 2, Table 3 summarises the higher-order configurations emerging across the reviewed literature. Each configuration represents a distinct pathway through which methodological and technological mechanisms combine – sometimes synergistically, sometimes independently – within creative IT startup environments. These patterns form the conceptual foundation for the CISMI-2025 integration model.

Through iterative comparison of M–T–C configurations across studies, several patterned combinations emerged. One pattern involves the alignment of digital transformation with structured methodological frameworks, where startups use technologically mediated insights to support hypothesis-driven iteration. Another pattern involves AI-intensive environments where entrepreneurs rely on learning-based or adaptive strategies rather than rigid methodological structures, reflecting the experimental and emergent nature of creative IT innovation. A further configuration appears in contexts where strong ecosystem support structures – such as accelerators, networks or creative clusters – enable methodological experimentation even in the absence of advanced technological tools (Flechas et al., 2022; Font-Cot et al., 2023).

Taken together, these configurations suggest that the relationship between methodologies and technologies in creative IT startups is not linear but combinational. Creative IT startup development appears to depend on hybrid formations in which entrepreneurial methods and technological mechanisms reinforce each other differently depending on contextual conditions. This reinforces the argument that innovation in creative industries emerges not from any single managerial approach or technological tool, but from the alignment and mutual shaping of methodologies, technology infrastructures and contextual characteristics.

These insights provide the basis for the conceptual integration presented in the CISMI-2025 model, which draws on the identified configurations to articulate how methodological and technological elements co-evolve within creative industry startup ecosystems.

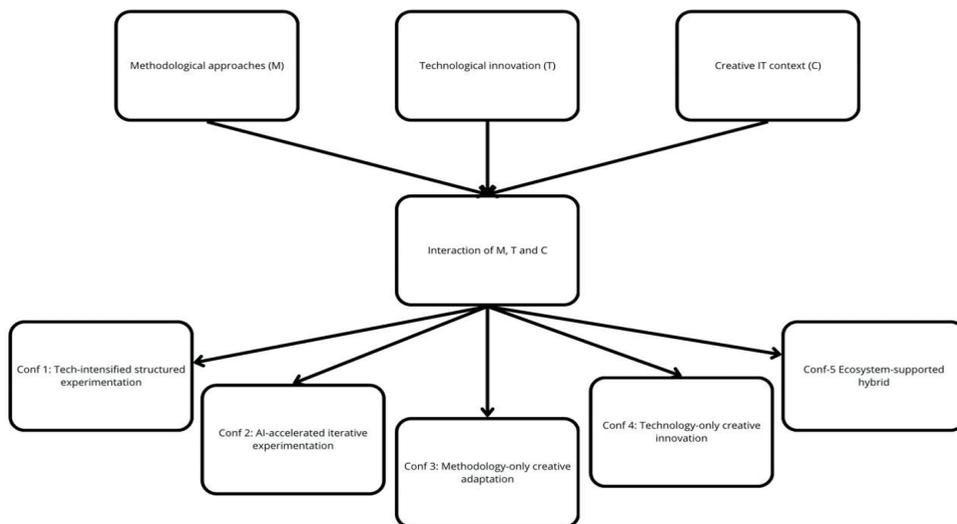


Figure 1. CISMI-2025 conceptual model showing five equifinal configurations of interaction between methodological approaches (M), technological innovation (T) and creative IT contextual conditions (C) in creative IT startup ecosystems

Note: Compiled based on the reviewed literature.

Figure 1 presents the CISMI-2025 conceptual model as an integration of three core dimensions: methodological approaches (M), technological innovation (T) and creative IT contextual conditions (C). Rather than depicting a linear process, the model visualizes five equifinal configurations through which these dimensions combine in creative IT startup ecosystems. Configuration 1 represents tech-intensified structured experimentation, where methodological frameworks are reinforced by digital transformation within creative IT contexts. Configuration 2 reflects AI-accelerated iterative experimentation, where AI tools and data analytics speed up learning cycles and refinement of creative digital products. Configuration 3 captures methodology-only creative adaptation, in which startups rely on adaptive and iterative logics under creative uncertainty without advanced technologies. Configuration 4 illustrates technology-only creative innovation, where digital tools and platforms drive opportunity identification even in the absence of explicit methodological frameworks. Configuration 5 depicts an ecosystem-supported hybrid path, where strong ecosystem resources enable the joint use of methodological and technological mechanisms even when creative contextual conditions are weaker or less defined.

Discussion. The results of this study indicate that innovation in creative IT startups emerges not from isolated technological or methodological choices, but from their dynamic interaction within specific contextual conditions. The configurational patterns identified in this review confirm that entrepreneurial activity in creative industries follows a hybrid logic, in which adaptive learning mechanisms coexist with advanced digital technologies. This supports systemic perspectives on entrepreneurship, which argue that innovation is shaped by interdependent cognitive, technological and institutional forces rather than linear cause–effect relationships (Cavallo et al., 2019; Stam and Van de Ven, 2021).

From a technological perspective, the dominance of digital transformation, artificial intelligence and data analytics reflects a fundamental shift in how creative ventures operate. Earlier studies have highlighted the role of digital tools in expanding market reach and reducing coordination costs (Centobelli et al., 2022; Saura et al., 2021). The present findings extend this view by showing that digital technologies also function as cognitive infrastructures for entrepreneurial decision-making. Through continuous data feedback, platform-based user interaction and algorithmic analysis, creative IT startups increasingly replace intuition-driven decisions with evidence-informed experimentation (Kostis et al., 2024; Hai and Tuyet, 2025). This helps explain why technology-intensive configurations are associated with faster learning cycles and more frequent business model adjustments.

From a methodological perspective, the prevalence of iterative experimentation, human-centered innovation and adaptive entrepreneurial logics confirms that creative IT startups operate under conditions where rigid long-term planning is often infeasible. Similar patterns have been observed in studies of early-stage innovation management and entrepreneurial education, where iterative trial-and-error learning and user-oriented problem framing dominate over predictive planning (Ousghir

and Daoud, 2022; Patil and Patil, 2024; Patil et al., 2023). In creative sectors, these methodological orientations play an additional role as interpretive frameworks through which entrepreneurs make sense of symbolic value, audience feedback and aesthetic uncertainty (Tanveer et al., 2024; Mai and Nguyen, 2023).

The interaction between methodologies and technologies becomes particularly visible in the identified configurations. In technology-intensive pathways, AI systems and data analytics tools amplify iterative experimentation by accelerating hypothesis testing and reducing the costs of trial-and-error learning (Kostis et al., 2024; Saura et al., 2021). In contrast, in methodology-driven configurations, adaptive entrepreneurial logics compensate for the absence of advanced technologies by enabling resource recombination and problem-solving under severe uncertainty (Utomo et al., 2025; Mai and Nguyen, 2023). These patterns align with recent theoretical arguments that entrepreneurial learning should be conceptualized as an emergent, tool-mediated and context-dependent process (Fiss, 2011).

The ecosystem dimension further conditions how these methodological and technological elements combine. Studies on entrepreneurial ecosystems emphasize that networks, accelerators, cultural infrastructures and policy environments shape not only resource access but also entrepreneurial cognition and strategic behavior (Cavallo et al., 2019; Flechas et al., 2022; Font-Cot et al., 2023). The present findings suggest that in strong creative ecosystems, methodological experimentation and technological adoption tend to co-evolve in a more stable and cumulative manner. Conversely, in fragmented ecosystems, startups rely more heavily on adaptive learning strategies and informal technological solutions.

From a practical perspective, these interpretations imply that policies supporting creative IT entrepreneurship should extend beyond investments in digital infrastructure alone. While access to AI tools and digital platforms is essential, equal emphasis must be placed on strengthening adaptive learning capabilities, user-oriented innovation practices and ecosystem-level coordination mechanisms (Jha and A., 2024; Flechas et al., 2022). For entrepreneurs, the findings underline that technological adoption generates value only when aligned with flexible, learning-oriented and context-sensitive methodological approaches.

Conclusion. This article examined how technological innovation and entrepreneurial methodologies combine in shaping creative IT startup development through a thematic and configurational review of peer-reviewed studies published between 2020 and 2025. The study was guided by two central research questions concerning dominant technological mechanisms and prevailing methodological approaches in creative IT entrepreneurship. In response to RQ1, the review demonstrates that digital transformation, artificial intelligence and data-driven tools constitute the core technological foundations of contemporary creative IT startups. These technologies redefine not only production and distribution processes but also opportunity identification, customer interaction and business model evolution.

In response to RQ2, the study shows that creative IT startups predominantly rely on iterative experimentation, human-centered innovation and adaptive

entrepreneurial logics. These approaches enable founders to navigate symbolic uncertainty, volatile demand and shifting audience preferences that characterize creative industries. The main scientific contribution of this study lies in the development of the CISMI-2025 conceptual model, which formalizes five equifinal configurations of interaction between methodological approaches, technological innovation and contextual conditions. By shifting the analytical focus from isolated factors to configurational patterns, the study advances a systemic understanding of innovation in creative IT startup ecosystems.

From a practical standpoint, the findings suggest that policymakers should complement investments in digital infrastructure with programmes aimed at strengthening entrepreneurial learning, adaptive experimentation and ecosystem coordination. For startup founders, the results highlight the importance of aligning technological adoption with flexible, learning-oriented methodological logics rather than treating technology as a standalone solution. This study is subject to several limitations. It is based exclusively on English-language journal articles and adopts a qualitative configurational logic rather than a statistical QCA approach. Furthermore, the focus on creative IT startups limits the direct transferability of the results to other entrepreneurial domains.

Future research should focus on empirically testing the CISMI-2025 model using longitudinal datasets, mixed-methods designs and cross-regional comparisons. Attention should be paid to the dynamic evolution of configurations over time and to the role of generative artificial intelligence as an emerging driver of creative entrepreneurial transformation.

References

Cavallo A. Ghezzi A. Balocco R. (2019) Entrepreneurial ecosystem research present debates and future directions. *International Entrepreneurship and Management Journal* Vol. 157 — P. 1291–1321 (in English)

Centobelli P. Cerchione R. Esposito E. Oropallo E. (2022) The undigital behavior of innovative startups empirical evidence and taxonomy of digital innovation strategies. *International Journal of Entrepreneurial Behavior and Research* Vol. 28. — No. 9. — P. 219–241 (in English)

Eslamloo F. Brown K. Biyouki Z.A. (2025) Successful commercialisation in startup accelerator programmes how different startup ecosystems matter. *Journal of Innovation and Knowledge* Vol. 10. — No. — 3 p. 100688 (in English)

Fahreza M. Prasetyo A. Rahmawati N. (2024) Enhancing startup business performance through iterative strategies and lean programs insights from capital cities in Indonesia to unlock Central Asia's potential. *Australasian Accounting Business and Finance Journal* Vol. 18. — No. 4 (in English)

Fiss P.C. (2011) Building better causal theories a fuzzy set approach to typologies in organization research. *Academy of Management Journal* Vol. 54. — No. 2. — P. 393–420 (in English)

Flechas X.A. Takahashi C.K. de Figueiredo J.C.B. (2022) The triple helix and the quality of the startup ecosystem a global view. *Revista de Gestao* Vol. 30. — No. 3. — P. 238–252 (in English)

Font Cot F. Lara Navarra P. Serradell Lopez E. (2023) Digital transformation policies to develop an effective startup ecosystem the case of Barcelona. *Transforming Government People Process and Policy* Vol. 17. — No. 3. — P. 344–355 (in English)

Hai P.D. Tuyet P.T. (2025) The impact of digital transformation and the regulatory role of organizational culture on business model innovation in enterprises a case study of tech startups in Vietnam. *Edelweiss Applied Science and Technology* Vol. 9. — No. 5. — P. 2225–2238 (in English)

Jha S.K. A.T.R. (2024) The future of incubation. *IIMB Management Review* Vol. 36. — No. 1. — P. 48–55 (in English)

Kostis A. Lidström J. Nair S. Holmström J. (2024) Too much AI hype too little emphasis on learning Entrepreneurs designing business models through learning by conversing with generative AI. *IEEE Transactions on Engineering Management* Vol. 71. — P. 15278–15291 (in English)

Mai K.N. Nguyen V.T. (2023) Entrepreneurial ecosystem affects organisational learning creativity and success. *Cogent Business and Management* Vol. 10. — No. 3. — 2260125 p. (in English)

Ousghir S. Daoud M. (2022) Exploratory study on innovation management in startups an attempt to design it through the business model. *Eastern European Journal of Enterprise Technologies* Vol. 1. — No. 13(115). — P. 20–26 (in English)

Papapanagiotou K. Rotsios K. Sklavounos N. (2021) Innovating in emerging markets by building meaningful IT alliances. *Studies in Business and Economics* Vol. 16. — No. 3. — P. 160–172 (in English)

Patil P.A. Patil S.K. (2024) Systematic planning and organizing entrepreneurial activities a holistic approach for fostering entrepreneurial thinking. *Journal of Engineering Education Transformation* Vol. 37. — No. IS2. — P. 968–973 (in English)

Patil P.A. Patil S.K. Kulkarni S.S. (2023) Inculcating design thinking methodology in the minds of first year engineering students a step towards entrepreneurial thinking. *Journal of Engineering Education Transformation* Vol. 36. — No. S2. — P. 283–291 (in English)

Rihoux B. Ragin C.C. eds. (2009) Configurational comparative methods qualitative comparative analysis and related techniques. Sage Vol. — 51 p. (in English)

Saura J.R. Reyes Menéndez A. de Matos N. Correia M.B. (2021) Identifying startups business opportunities from UGC on Twitter chatting an exploratory analysis. *Journal of Theoretical and Applied Electronic Commerce Research* Vol. 16. — No. 6. — P. 1929–1944 (in English)

Stam E. Van de Ven A. (2021) Entrepreneurial ecosystem elements. *Small Business Economics* Vol. 56. — No. 2. — P. 809–832 (in English)

Tanveer A. De Oliveira R.T. Rizvi S. (2024) How sector fluidity knowledge intensiveness and innovation shapes startups resilience during crises. *Journal of Business Venturing Insights* Vol. 22. — e00500 (in English)

Utomo H. Wirawan S.K. Dharmawangsa S.A. (2025) Fostering resilience of prospective startup businesses a longitudinal study. *Cogent Business and Management* Vol. 12. — No. 1. — 2501207 p. (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.

Правила оформления статьи для публикации в журнале смотреть на сайте:

[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>

Ответственный редактор **А. Ботанкызы**

Редакторы: **Д.С. Аленов, Т. Апендиев**

Верстка на компьютере: **Г.Д. Жадырановой**

Подписано в печать 27.02.2026.

46,0 п.л. Заказ 1.