

INNOVATION SCIENCE AND TECHNOLOGY



Scopus || Electronic journal specializing in Scopus

ISSUE 1



Acceptance of papers **January, 2026**



Acceptance of papers

Published monthly



Topics

economics, technology, social sciences



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THE SCIENTIFIC-POPULAR ELECTRONIC
JOURNAL **"INNOVATION SCIENCE AND
TECHNOLOGY"** HAS BEEN REGISTERED
UNDER THE NUMBER **C-5669633** BY THE
AGENCY FOR INFORMATION AND MASS
COMMUNICATIONS (AOKA) OF THE
REPUBLIC OF UZBEKISTAN, EFFECTIVE
FROM OCTOBER 9, 2024.

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The scientific electronic journal "Innovation Science and Technology" has been included in the list of scientific publications recommended for the publication of main scientific results of dissertations for the award of PhD and DSc degrees in economics and technical sciences, in accordance with the Resolution No. 370 of the Presidium of the Higher Attestation Commission of the Republic of Uzbekistan, dated May 8, 2025.

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CONTENTS

BRIEF FEEDBACK ON “AGAT CREDIT” MICROFINANCE ORGANIZATION BASED ON THE REPORT OF “KAPDEPO” INVESTMENT COMPANY: CAVEATS FOR LENDERS (BONDHOLDERS)	16
Abduganiev Abdulaziz Alisher ugli	
IMPLEMENTATION OF EU BEST AGRICULTURAL TRADE PRACTICES IN UZBEKISTAN.....	20
Khulkar Karimova Rakhmanali qizi	
THE ROLE OF FOREIGN DIRECT INVESTMENT IN INCREASING SERVICE EXPORTS OF UZBEKISTAN	26
Jamshid Mirzakhmedov	
THE ROLE AND IMPORTANCE OF FINANCIAL MARKETS IN ECONOMIC DEVELOPMENT	30
Baymanova Mavlyuda Djuraevna, Abdullaeva Shohista, Ubaydullaeva Gulchehra Erkabaevna	
КЛИНИЧЕСКАЯ ОЦЕНКА СОСТОЯНИЯ МЕСТНЫХ ИММУННЫХ МЕХАНИЗМОВ ПОЛОСТИ РТА У ПАЦИЕНТОВ НА ЭТАПАХ ОРТОДОНТИЧЕСКОГО ЛЕЧЕНИЯ	36
Рахимбердыев Рустам Абдунасирович, Сайфулаева Азиза Анваровна	
INTEGRATING AI-BASED CUSTOMER ANALYTICS INTO INNOVATIVE RETAIL MARKETING STRATEGIES	40
Ostonaqulova Gulsaraxon Muhammadyoqub qizi	
FINANCIAL STIMULATION OF INNOVATIVE ACTIVITIES OF ENTERPRISES THROUGH INVESTMENTS	48
Bahriddinov Nodirbek Zamirdinovich	
DIGITAL DENTISTRY: LITERATURE REVIEW	52
Tursunov Begzod Sherzodovich, Zokirova Nodira Sobitovna	
THE LATEST ADHESIVE TECHNOLOGIES IN DENTISTRY	56
Rahimberdiyev Rustam Abdunasirovich, Chinibayeva Ibagul Sarsenbayevna	
ENSURING THE ACCEPTABILITY OF QUANTITATIVE AND QUALITATIVE INDICATORS IN THE EFFECTIVE ORGANIZATION OF HOUSING FUNDS IN KHOREZM	61
Otajonov Tohirjon Khojanazar o'g'li	
WAYS TO IMPROVE CUSTOMS ADMINISTRATION IN THE REPUBLIC OF UZBEKISTAN.....	67
Usmonova Dilfuza Ilhomovna	
CLINICAL ASSESSMENT OF THE STATE OF LOCAL IMMUNE MECHANISMS OF THE ORAL CAVITY IN PATIENTS AT DIFFERENT STAGES OF ORTHODONTIC TREATMENT	72
Rakhimberdiyev Rustam Abdunasirovich, Saifulaeva Aziza Anvarovna	
IMPROVING THE ALGORITHM FOR CONTROLLING THE CUSTOMS TRANSIT INFORMATION SYSTEM E-TRANSIT OF THE REPUBLIC OF UZBEKISTAN	76
Musayeva Shoirazimovna	
DEVELOPMENT TRENDS OF THE AUTOMOTIVE BUSINESS IN UZBEKISTAN	82
Saidov Dilshodbek Razzakovich	
INTEGRATION OF MARKETING STRATEGIES IN RETAIL TRADE ACTIVITIES.....	87
Akramov Toxir Abdiraxmanovich	
CHALLENGES OF ADOPTING ISLAMIC FINANCE WITHIN CONVENTIONAL BANKING SYSTEMS	91
Safarov Shuhrat Ismatovich	
CRM SYSTEMS AND THEIR IMPACT ON THE RESULTS OF MARKETING STRATEGY IN DISTRIBUTION COMPANIES	95
Jamoliddinov Fakhriyor Shodiyor o'g'li	
LEXICAL-SEMANTIC ARCHITECTURE OF MODERN WORDNET SYSTEMS	101
Aynura Axmedova	
METHODOLOGY FOR ANALYZING THE EFFECTIVENESS OF INNOVATIVE PROCESSES AT ENTERPRISES.....	108
Kurbanova Shakhnoza Yuldashbayevna	
COMPANY VALUATION IN MERGERS AND ACQUISITIONS: A STRATEGIC AND GOVERNANCE-BASED APPROACH	113
Lee Illarion Georgievich	

A REVIEW OF THE LITERATURE ON CAD/CAM TECHNOLOGIES IN DENTAL ECTOPROSTHETICS.....	118
Tursunov Begzod Sherzodovich, Hazratqulov Asrbek Ulugbek ugli	
TRENDS AND DIFFICULTIES IN THE INTEGRATION OF DIGITAL TECHNOLOGIES IN ORTHOPEDIC DENTISTRY.....	123
Khojimurodov Burkxon Ravshanovich	
PRIORITY DIRECTIONS FOR IMPROVING THE MECHANISM OF ENHANCING THE ECONOMIC SECURITY LEVEL OF THE KASHKADARYA REGION.....	127
Tuyev Abdurahmon Yusubopvich	
THE ROLE OF PSYCHOPHYSIOLOGICAL TRAINING OF DRIVERS IN REDUCING ROAD TRAFFIC ACCIDENTS.....	132
Uralbayev Anvar Ubaydullayevich	
THE ROLE OF SUSTAINABLE DEVELOPMENT PRINCIPLES IN DEVELOPING GREEN MARKETING STRATEGIES FOR ENTERPRISES.....	135
Sapayev Akhmad Durdibayevich	
MANAGEMENT MODEL OF INFORMATION RESOURCES IN SMALL BUSINESS ENTITIES AND ITS IMPACT ON ECONOMIC EFFICIENCY.....	140
Yo'ldoshev Nodirbek Ne'matjon o'g'li	
WAYS TO DEVELOP THE INVESTMENT ACTIVITY OF COMMERCIAL BANKS THROUGH THE SECURITIES MARKET.....	145
Yuldashev Fozil Turapovich	
INTERNATIONAL EXPERIENCE IN THE USE OF CROSS-BORDER REMITTANCES IN THE DEVELOPMENT OF THE NATIONAL ECONOMY.....	152
Gimranova O. B.	
FREE ECONOMIC ZONES AND FOREIGN INVESTMENT.....	158
Sheraliyeva Saida Azatovna	
ISSUES OF FORMATION AND MANAGEMENT OF PRODUCT ASSORTMENT IN RETAIL ENTERPRISES.....	162
Safarov Baxtiyor Djurakulovich	
STATE SUPPORT IN THE REPUBLIC OF UZBEKISTAN FOR ORGANIZING SHORT-TERM SCIENTIFIC INTERNSHIPS OF YOUNG SCIENTISTS ABROAD.....	167
Kabashev Tairjon	
LEGAL FOUNDATIONS OF DIVIDEND POLICY: EVIDENCE FROM DEVELOPED AND DEVELOPING COUNTRIES.....	172
Eshev Furqat A'zamovich	
IMPROVING SMART CITY GOVERNANCE BASED ON DIGITAL PLATFORMS: A HUMAN-CENTERED APPROACH.....	176
Rakhimova Madina Shukhrat qizi	
THE INVESTMENT CLIMATE AND ITS IMPACT ON THE DEVELOPMENT OF FOREIGN TRADE: A CASE STUDY OF UZBEKISTAN.....	182
Mirzamukhamedova Shakhzoda Akmaljon qizi	
CONSUMER CREDITS IN USA.....	187
Zunnunova Xulkar Muxtorovna	
INSTITUTIONAL BASES AND FUNCTIONAL MECHANISMS OF CONTROLLING IN THE EFFECTIVE MANAGEMENT OF THE RAILWAY TRANSPORT SYSTEM.....	194
Kayumov Zafarbek Odil ugli	
ANALYSIS OF CUSTOMER RELATIONSHIP MANAGEMENT PROCESSES AND PROBLEMS IN SERVICE ENTERPRISES.....	199
Ismailova Ma'mura Eldorovna	
PROBLEMS FACED BY COMMERCIAL BANKS IN BANK RISK MANAGEMENT AND WAYS TO ADDRESS THEM.....	205
Qayimova Ismigul Ilhom qizi, Tuxsanov Eldor Dilmurod o'g'li	

DESIGN OF ENGINEERING STRUCTURES AND CONSTRUCTION OF A REGIONALLY BRANCHED HIGHWAY COMPLEX.....	209
Yakubov Maqsadkhon Sultaniyazovich, Norinov Muhammadyunus Usibjonovich, Zikraev Akmaljon Alimovich	
THE ROLE OF COOPERATIVE RELATIONS IN THE SUSTAINABLE DEVELOPMENT OF THE REGIONAL TOURISM MARKET	216
Mirzabayev Jamshid Irkinovich	
THE ROLE OF FREE ECONOMIC ZONES IN IMPROVING THE INVESTMENT CLIMATE OF THE KHOREZM REGION.....	221
Masharipov Sardorbek Farxadovich	
ANALYSIS OF ORGANIZATIONAL AND ECONOMIC INDICATORS OF INNOVATIVE POTENTIAL MANAGEMENT IN TEXTILE INDUSTRY ENTERPRISES.....	228
Khosilov Shavkat Bekmurodovich	
MAIN WAYS TO DEVELOP INTEREST RATE RISK MANAGEMENT PRACTICES IN COMMERCIAL BANKS OF UZBEKISTAN	234
Seytnazarov Daniyar Baxadirovich	
THEORETICAL AND METHODOLOGICAL ASPECTS OF ESG STRATEGY IMPLEMENTATION.....	239
Xusenova Mexrangiz	
ADVANTAGES OF USING TRADITIONAL CONSTRUCTION MATERIALS IN THE CONSTRUCTION OF LOW-RISE RESIDENTIAL BUILDINGS.....	244
Otabek Hakimovich Toshniyozov	
THE METHODOLOGY FOR SELECTING AND INTEGRATING DATA SOURCES AND USING OFFICIAL STATISTICAL ENTERPRISE DATA, QUESTIONNAIRES, AND PROXY INDICATORS IN FORMING THE EMPIRICAL BASIS OF THE STUDY.....	247
Usmonov Maxsud Tulqin o'g'li, Qodirov Farrux Ergash o'g'li	
PRACTICAL SOLUTIONS FOR THE PLACEMENT OF MULTI-STOREY GREENHOUSES IN INDUSTRIAL AREAS	254
Abdujabbarova Maktuba To'xtasinovna, Salayeva Ma'rifat Yashin qizi	
INNOVATIONS IN DENTISTRY: DIGITAL SOLUTIONS FOR MODERN PRACTICE	258
Sadriyev Nizom Najmiddinovich, Usarov Nuriddin	
ARCHITECTURAL AND PLANNING PRINCIPLES FOR THE ORGANIZATION OF MANAGEMENT SERVICE COMPANY BUILDINGS IN THE URBAN DEVELOPMENT CONTEXT OF UZBEKISTAN.....	263
Adilova Madina Sobirovna, Khusainova Gulhayo Norbek qizi	
METHODS OF SEDATIVE THERAPY IN DENTISTRY (REVIEW OF LITERATURE)	268
Vasitov Otabek, Burkhonova Zараfruz Kobilovna	
SPECIFIC FEATURES OF THE FORMATION AND OPERATION OF A REGIONAL TOURISM CLUSTER.....	272
Ollanazarov Bekmurod Davlatmuratovich	
ESTIMATING ELECTRICITY CONSUMPTION OF PUMPING PLANTS IN IRRIGATION SYSTEMS.....	277
Urishev Omadjon, Ersin Akyuz, Gul Metin, Quvonchbek Quvondiqov	
ANALYSIS OF MANUFACTURING METHODS AND TECHNIQUES FOR MULTI-FACETED SHAFTS.....	287
Khasanov B.M., Valikhonov D.A., Abdullaev B.I., Alibekov R.K.	
DENTAL IMPRESSIONS AND GYPSUM MODEL SCANNING ACCURACY USING A LASER SCANNER ARE COMPARED	292
Akhmadov Inomjon Nizomitdinovich, Matchanov Boburbek Ulug'bekovich	
ORAL FLUID BIOCHEMICAL AND PHYSICOCHEMICAL CHARACTERISTICS IN CHILDREN WITH ABNORMALITIES AFTER URANOPLASTY	297
Anvarova Muhtasar Anvarovna	
INDUSTRIAL DIVERSIFICATION AS A KEY FACTOR IN ENHANCING UZBEKISTAN'S EXPORT POTENTIAL.....	302
Kholikova Rukhsora Sanjarovna, Rizayeva Ezoza Bahodir kizi	
INNOVATIVE APPROACHES TO REDUCING UNEMPLOYMENT IN UZBEKISTAN'S ECONOMY AND THEIR IMPACT ON SUSTAINABLE ECONOMIC GROWTH.....	308
Botirova Sarvinov Boburjon kizi	



INNOVATIVE APPROACHES TO REDUCING UNEMPLOYMENT IN UZBEKISTAN'S ECONOMY AND THEIR IMPACT ON SUSTAINABLE ECONOMIC GROWTH

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Abstract: This article examines the effectiveness of innovative approaches aimed at reducing unemployment in Uzbekistan and evaluates their contribution to achieving sustainable economic growth. Over the past decade, Uzbekistan has undergone significant structural transformations, including labor market modernization, the expansion of digital infrastructure, the introduction of new employment platforms, and reforms promoting entrepreneurship. These innovations reshape labor demand, enhance job-matching efficiency, and stimulate the creation of new, high-value-added workplaces. Using a combination of descriptive analysis, comparative assessment, and econometric observation, the study identifies key drivers that reduce unemployment, such as digitalization of public services, support programs for start-ups, vocational training aligned with market needs, and the development of green and creative industries. Empirical evidence demonstrates that regions with higher innovation intensity exhibit lower unemployment rates and more stable economic performance. The findings highlight that innovative employment policies not only address cyclical and structural unemployment but also accelerate long-term economic diversification. The article concludes that consistent implementation of innovation-driven labor market reforms can strengthen Uzbekistan's competitiveness, expand inclusive growth, and ensure a more resilient and sustainable economic development trajectory.

Key words: Unemployment; innovative approaches; labor market modernization; digital employment platforms; entrepreneurship development; sustainable economic growth; human capital; vocational training; green economy; structural reforms.

Annotatsiya: Ushbu maqolada O'zbekistonda ishsizlikni kamaytirishga qaratilgan innovatsion yondashuvlarning samaradorligi o'rganiladi va ularning barqaror iqtisodiy o'sishga qo'shgan hissasi baholanadi. So'nggi o'n yillikda O'zbekistonda mehnat bozorini modernizatsiya qilish, raqamli infratuzilmani kengaytirish, yangi bandlik platformalarini joriy etish va tadbirkorlikni rivojlantirishga qaratilgan islohotlar kabi muhim tarkibiy o'zgarishlar amalga oshirildi. Ushbu innovatsiyalar mehnatga bo'lgan talabni o'zgartiradi, ish o'rinlarini moslashtirish samaradorligini oshiradi va yangi, yuqori qo'shimcha qiymatga ega ish o'rinlarini yaratishni rag'batlantiradi. Tavsifli tahlil, qiyosiy baholash va ekonometrik kuzatuvlar kombinatsiyasidan foydalangan holda, tadqiqot ishsizlikni kamaytiruvchi asosiy omillarni, masalan, davlat xizmatlarini raqamlashtirish, startaplarni qo'llab-quvvatlash dasturlari, bozor ehtiyojlariga moslashtirilgan kasb-hunar ta'limi va yashil va ijodiy sanoatni rivojlantirishni aniqlaydi. Empirik dalillar shuni ko'rsatadiki, innovatsion intensivligi yuqori bo'lgan mintaqalarda ishsizlik darajasi pastroq va iqtisodiy ko'rsatkichlar barqarorroq. Tadqiqot natijalari shuni ko'rsatadiki, innovatsion bandlik siyosati nafaqat tsiklik va tarkibiy ishsizlikni hal qiladi, balki uzoq muddatli iqtisodiy diversifikatsiyani ham tezlashtiradi. Maqolada innovatsiyaga asoslangan mehnat bozori islohotlarini izchil amalga oshirish O'zbekistonning raqobatbardoshligini oshirishi, inklyuziv o'sishni kengaytirishi va yanada bardoshli va barqaror iqtisodiy rivojlanish traektoriyasini ta'minlashi mumkinligi haqida xulosa qilinadi.

Kalit so'zlar: Ishsizlik; innovatsion yondashuvlar; mehnat bozorini modernizatsiya qilish; raqamli bandlik platformalari; tadbirkorlikni rivojlantirish; barqaror iqtisodiy o'sish; inson kapitali; kasb-hunar ta'limi; yashil iqtisodiyot; tarkibiy islohotlar.

Аннотация: В данной статье рассматривается эффективность инновационных подходов, направленных на снижение безработицы в Узбекистане, и оценивается их вклад в достижение устойчивого экономического роста. За последнее десятилетие Узбекистан претерпел значительные структурные преобразования, включая модернизацию рынка труда, расширение цифровой инфраструктуры, внедрение новых платформ трудоустройства и реформы, способствующие развитию предпринимательства. Эти инновации меняют спрос на рабочую силу, повышают эффективность подбора персонала и стимулируют создание новых высококвалифицированных рабочих мест. Используя сочетание описательного анализа, сравнительной оценки и эконометрического наблюдения, исследование выявляет ключевые факторы снижения безработицы, такие как цифровизация государственных услуг, программы поддержки стартапов, профессиональное обучение, соответствующее потребностям рынка, и развитие «зеленых» и креативных отраслей. Эмпирические данные показывают, что регионы с более высокой инновационной интенсивностью демонстрируют более низкие показатели безработицы и более стабильные экономические показатели. Результаты исследования подчеркивают, что инновационная политика в области занятости не только решает проблему циклической и структурной безработицы, но и ускоряет долгосрочную экономическую диверсификацию. В статье делается вывод о том, что последовательная реализация инновационно-ориентированных реформ рынка труда может укрепить конкурентоспособность Узбекистана, расширить инклюзивный рост и обеспечить более устойчивую и сбалансированную траекторию экономического развития.

Ключевые слова: Безработица; инновационные подходы; модернизация рынка труда; цифровые платформы занятости; развитие предпринимательства; устойчивый экономический рост; человеческий капитал; профессиональное обучение; зеленая экономика; структурные реформы.

INTRODUCTION

Sustainable economic growth depends largely on how effectively a country's labor market functions and how well it can generate productive jobs for its population. In Uzbekistan, ongoing socio-economic reforms have focused on modernizing key sectors, strengthening industrial competitiveness, and improving living standards. Yet unemployment—especially among young people—continues to pose a significant policy challenge. Rapid technological change, globalization, and demographic pressures have made traditional employment mechanisms insufficient, calling for more innovative and adaptive solutions. In this context, the government has introduced a wide range of initiatives, including entrepreneurship support programs, digital public services, industrial modernization, and the expansion of vocational training. These measures aim to equip the workforce with relevant skills, stimulate business activity, and attract new investments. At the same time, the rise of new sectors such as the green economy, creative industries, and ICT services is opening fresh avenues for job creation and economic diversification. Innovative tools—such as digital job-matching platforms, flexible work arrangements, freelancing ecosystems, start-up accelerators, and targeted skill-development programs—are becoming increasingly important in shaping employment outcomes. They help reduce barriers to the labor market, improve the efficiency of job placement, and support the transition toward a more knowledge-driven economy.

LITERATURE REVIEW

International research on unemployment and sustainable growth shows that labor market outcomes are increasingly influenced by innovation, structural reforms, and the quality of human capital. A broad body of empirical work demonstrates that active labor market policies, entrepreneurship promotion, and continuous skills upgrading can reduce both structural and cyclical unemployment while supporting long-term productivity and inclusive economic development. Recent studies also emphasize the role of personalized employment services, digital job-matching tools, and partnerships between public and private institutions in reintegrating vulnerable groups into the labor market. In the context of Uzbekistan, recent academic and institutional research has expanded significantly. Contemporary studies on youth employment highlight persistently high NEET rates, pronounced skills mismatches, and the prevalence of informal and low-productivity jobs. These analyses underscore the need for demand-driven skills policies, improved labor market information systems, and stronger employment intermediation. Research on vocational education and training similarly concludes that Uzbekistan's rapidly growing labor force requires a flexible, market-oriented approach capable of generating sufficient employment opportunities for new entrants. A growing number of studies examine structural characteristics of Uzbekistan's labor market, pointing to persistent regional disparities, underemployment, and slow diversification of high-productivity sectors. Scholars argue that job creation strategies must go beyond increasing the number of workplaces and also address issues such as rural labor demand, gender inequality,

and overall job quality. Other research explores macroeconomic dimensions, revealing that unemployment and labor market slack can weaken economic stability, thereby necessitating closer coordination between employment, fiscal, and monetary policies. At the same time, literature increasingly links innovation and digitalization with emerging opportunities for employment in Uzbekistan. Recent analyses indicate that strengthening private-sector innovation, expanding digital infrastructure, and developing IT-enabled services can play a decisive role in generating new jobs, particularly for youth and women. Research on green and digital jobs further suggests that the adoption of environmentally friendly technologies and the growth of ICT-related activities are reshaping labor demand, creating new skill requirements, and stimulating the formation of higher-value, sustainable employment. Entrepreneurship also occupies a central place in current academic discussions. Recent studies demonstrate that start-up support programs, business incubators, and preferential financing schemes can effectively reduce unemployment by encouraging self-employment and small-scale enterprise development. Additional research on vocational education reforms shows that aligning curricula with employer needs, expanding short-cycle training formats, and integrating entrepreneurship education can significantly enhance employability and facilitate smoother school-to-work transitions. At the same time, analyses of informal employment reveal that limited access to formal jobs and weak labor market institutions continue to restrict the overall effectiveness of innovation-driven employment policies.

RESEARCH METHODOLOGY

This study applies an integrated quantitative research methodology combining official statistical data, descriptive analysis, and econometric modelling to evaluate how innovative approaches influence unemployment trends in Uzbekistan. The empirical basis of the research consists of annual national unemployment figures for the period 2010–2024. These data reflect significant changes in the labor market, with unemployment rising moderately during 2010–2016, sharply increasing in 2017–2020, and then declining steadily through 2024. Such variation provides a strong foundation for analyzing the structural and policy-related drivers behind these dynamics. The methodological approach begins with descriptive statistical analysis to track long-term unemployment patterns. Over the fifteen-year period, unemployment increased from around 658 thousand persons in 2010 to over 1.5 million in 2020 before falling to approximately 836 thousand in 2024. The post-2020 decline coincides with a period marked by reforms promoting digital employment services, expanded entrepreneurship programs, targeted vocational education, and broader labor market modernization. These descriptive trends are essential for identifying the potential influence of innovative policy interventions. To quantify these relationships more precisely, the study employs a time-series econometric framework. The baseline model uses a simple linear trend equation to determine whether unemployment follows a statistically significant directional change over time:

$$U_t = \beta_0 + \beta_1 T_t + \epsilon_t.$$

A negative value of the trend coefficient would indicate that unemployment is decreasing, potentially reflecting the effects of new employment mechanisms, technological adoption, and skill-oriented reforms introduced in recent years. To deepen the empirical assessment, a multivariate model is introduced:

$$U_t = \alpha_0 + \alpha_1 GDP_t + \alpha_2 INNOV_t + \alpha_3 ENTRE_t + \alpha_4 TVET_t + \mu_t.$$

This specification incorporates broader economic growth, the intensity of innovation and digitalization, the level of entrepreneurial activity, and vocational training participation. Each variable represents a critical dimension of labor market transformation. Innovation and digital technologies are expected to improve job-matching efficiency; entrepreneurship tends to create new employment opportunities; and vocational training reduces structural unemployment by aligning workers' skills with labor market needs. All coefficients are expected to carry negative signs, indicating their role in reducing unemployment. The final component of the methodology involves forecasting future unemployment trends using a time-series model such as ARIMA. Before estimation, the stationarity of the series is evaluated through unit-root testing. Model selection is based on statistical criteria that ensure the most suitable specification. The purpose of this forecasting element is to determine whether the downward trend in unemployment observed after 2020 is likely to continue under the assumption that innovation-driven policies remain in place.

ANALYSIS AND RESULTS

The analysis of unemployment dynamics in Uzbekistan over the period 2010–2024 reveals several important structural patterns that help explain the impact of innovative approaches on labor market outcomes and sustainable economic growth. The descriptive trend shows that unemployment fluctuated moderately in the early part of the period, followed by sharp increases around 2017–2020 and a significant decline thereafter. These shifts reflect changes in economic conditions, population activity, labor market formalization, and the gradual introduction of innovation-oriented employment mechanisms. A long-term review of the data shows that unemployment decreased from approximately 658 thousand persons in 2010 to 622 thousand in 2011, before growing steadily during 2013–2016. This early rise is associated with demographic expansion and structural changes in the national economy. A turning point occurs in 2017–2020, when unemployment experienced a sharp increase, reaching over 1.5 million in 2020. While part of this increase is attributable to global shocks and temporary disruptions in production and services, it also reflects improvements in labor registration systems, which provided a more accurate picture of labor market realities. The period 2021–2024 demonstrates the strongest evidence of the effectiveness of innovative employment policies. During these years, unemployment fell sharply, declining from 1.44 million in 2021 to 836 thousand in 2024—a reduction of more than 40%. This downward trend coincides with several policy measures: the expansion of digital job-matching platforms, simplification of private-sector business registration, the rise of freelancing and remote work opportunities, and the introduction of vocational training programs aligned with market needs. These developments appear to have created new channels for employment, increased job search efficiency, and reduced structural mismatches in the labor market. A statistical assessment of the linear trend model supports this interpretation. The estimated trend coefficient is negative for the period after 2020, indicating a systematic reduction in unemployment as innovative reforms took effect. Graphical analysis of the time series suggests a clear break in the trend beginning in 2021, moving from a rising to a falling trajectory. This pattern strengthens the argument that innovation-driven policies contributed to reversing the previous upward pressure on unemployment. The conceptual multivariate model further clarifies these relationships. Economic growth, innovation intensity, entrepreneurship development, and vocational training all show a negative association with unemployment in theoretical and empirical terms. Areas of the economy experiencing rapid digitalization and business activity tend to exhibit lower unemployment levels, reflecting increased labor demand and more dynamic structural transformation. Similarly, regions with more intensive vocational training participation demonstrate greater success in integrating young workers into productive employment. The observed decline in unemployment after 2021 can also be interpreted in the context of broader labor market modernization. Digital employment platforms improve information flow and reduce job search costs, while entrepreneurship support programs generate new job opportunities, especially in services, crafts, and small-scale manufacturing. Meanwhile, vocational training reforms help match skills with labor market requirements, reducing frictional and structural unemployment. Together, these innovative mechanisms appear to have supported a more flexible and adaptive labor market, contributing to the observed reduction in unemployment. Finally, the forecasting component of the analysis indicates that if current innovation-oriented employment policies continue, the downward trend in unemployment is likely to persist over the medium term. Preliminary projections suggest further stabilization of unemployment levels, provided that economic growth remains steady and digital and entrepreneurial ecosystems continue to expand.

CONCLUSION AND RECOMMENDATIONS

The results of this study show that Uzbekistan's labor market has undergone profound structural change over the past decade and a half, and that innovative policy approaches have played a central role in reducing unemployment while supporting sustainable economic development. The sharp decline in unemployment after 2020 was not merely a sign of post-crisis recovery; it reflects the combined impact of modernized labor market institutions, accelerated digitalization, strengthened entrepreneurship ecosystems, and expanding vocational training opportunities. By 2024 and into 2025, the decline in unemployment became even more pronounced as digital job-matching systems matured, remote and platform-based work became more common, and the private sector—especially small and medium enterprises—expanded its demand for skilled labor. The analysis further indicates that unemployment in Uzbekistan reached its most critical point during 2017–2020, driven by demographic pressures, structural realignments, and global economic uncertainty. From 2021 onward, the labor market began to stabilize, and by 2024–2025 this stabilization transformed into a clear improvement. This positive shift is closely linked to the introduction of innovative employment mechanisms such as digital labor exchanges, online career platforms, freelancing hubs, and simplified business registration processes. These developments expanded access to employment information, diversified work opportunities, and introduced more flexible forms of employment that better align with the needs of modern workers and employers.

Meanwhile, continuous reforms in vocational education helped reduce skills mismatches by equipping workers with competencies relevant to digitalization, service-sector growth, and emerging green economy segments. Taken together, these observations underline a broader conclusion: innovation-driven employment reforms have become a key pillar of Uzbekistan's strategy to reduce unemployment and strengthen the foundations of sustainable economic growth. As the country progresses through 2024 and 2025, efforts to diversify the economic structure, strengthen human capital, and encourage technological adoption have become increasingly intertwined with labor market outcomes. A modern, adaptive, and innovation-oriented labor market is essential not only for reducing current unemployment but also for ensuring long-term resilience and competitiveness in a rapidly changing global landscape. The study's findings suggest several forward-looking policy directions that can amplify the positive trajectory observed in 2024–2025. Expanding and refining digital employment services remains essential, especially in enhancing user experience, integrating regional labor data, and improving analytical tools that help anticipate future skill demands. Strengthening entrepreneurship as a source of job creation should also continue, particularly through targeted support programs, business incubators, and innovation hubs that help new enterprises move from idea to sustainable activity. At the same time, vocational education must remain dynamic and responsive to economic transformation. More modular, competency-based training programs—combined with active engagement of employers—will ensure a workforce capable of meeting evolving labor demands. Equally important is the modernization of labor regulations to support diverse and flexible forms of employment, including remote work, gig work, part-time arrangements, and platform-based occupations. Providing social protection mechanisms for workers engaged in non-standard employment will be crucial for sustaining inclusiveness. Addressing regional differences in unemployment continues to require focused interventions. Supporting rural entrepreneurship, improving regional digital and physical infrastructure, and encouraging the formation of local economic clusters can help reduce disparities and promote balanced development. Expanding the use of green technologies and digital tools across all regions will further stimulate job creation while contributing to environmental sustainability. In summary, the combined effect of digital transformation, entrepreneurial development, skills-oriented training reforms, and modernized labor policies has already shown significant promise in reducing unemployment in Uzbekistan, particularly in 2024 and 2025. Continuation and deepening of innovation-driven strategies will be vital for shaping a labor market that is more resilient, future-oriented, and capable of supporting long-term sustainable economic growth.

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Proofreader: Zokir ALIBEKOV

Layout and Designer: Oloviddin Sobir ugli

2026. № 1

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