ECONOSCITECH INTEGRATION

ISSUE 11

INTERNATIONAL SCIENTIFIC ELECTRONIC JOURNAL

TASHKENT STATE UNIVERSITY OF ECONOMICS

American University of Technology
Powered by Arizona State University®

ISSN: 3060-5075



Acceptance of articles
PUBLISHED MONTHLY

ARTICLE CONTRIBUTORS
PROFESSORS, SCHOLARS, SPECIALISTS, AND RESEARCHERS



Google scholar

OpenAIRE

ISSN INTERNATIONAL STANDARD SERIAL NUMBER DENMARK

CONTACT: +998 94 3540880 https://econoscitech-integration-journal.uz 2026



EDITOR-IN-CHIEF:
Zufarova Nozima Gulamiddinovna
DSc., Dean of Tourism Faculty, TSUE

DEPUTY EDITOR-IN-CHIEF:
Makhmudov Nosir Makhmudovich
DSc., Prof., Academican

DEPUTY EDITOR-IN-CHIEF:
Suyunov Dilmurod Xolmurodovich
Doctor of Economics (DSc), Professor,

DEPUTY EDITOR-IN-CHIEF:
Allayarov Shamsiddin Amanullayevich
doctor of economics (DSC), professor

RESPONSIBLE SECRETARY:
Otaboyev Axmed Maxsudbek o'g'li
TSUE independent researcher

THE SCIENTIFIC-POPULAR ELECTRONIC JOURNAL **"ECONOSCITECH-INTEGRATION"** HAS BEEN REGISTERED UNDER THE NUMBER C-5669651 BY THE AGENCY FOR INFORMATION AND MASS COMMUNICATIONS (AOKA) OF THE REPUBLIC OF UZBEKISTAN, EFFECTIVE FROM OCTOBER 9, 2024.

In accordance with Resolution No. 384/6 dated April 10, 2026, issued by the Presidium of the Supreme Attestation Commission under the Ministry of Higher Education, Science and Innovation of the Republic of Uzbekistan, this journal is included in the list of recommended international scientific publications for publishing the primary research findings of doctoral dissertations in the field of Economic Sciences.

Partners: Tashkent State University of Economics / American University of Technology in Tashkent (AUT)

Electronic publication. Issue 11.
Approved for publication in Novermber 2026.

Editorial Board Members:



Sharipov Kongratbay Avezimbetovich,
Doctor of Technical Sciences (DSc), Professor



Said Irandoust,
Doctor of Chemical Engineering Sciences, Professor



Abdurakhmanova Gulnora Kalandarovna,
Doctor of Economic Sciences (DSc), Professor



Tokunaga Masahiro,
professor, PhD of Economics of the Faculty of Business and Commerce



Debasis Das,
professor Department of Computer Science



Nitin Goje,
professor and Program Lead - Computer Science



Sajid Mohy Ul Din,
International Lecturer Universiti Pendidikan Sultan Idris, Tanjung Malim, Malaysia



Kamaruzzaman Muhammad,
Associate Professor UiTM, (PhD), CA (M), CPA (M), ASA



Артамонов Антон Анатольевич,
(M.D.) ООО «Международный Нейроуниверситет им. Д.Р. Ягудина»

CONTENTS

ECONOMIC SIGNIFICANCE OF REGIONAL POSTAL SERVICE INFRASTRUCTURE IN THE DEVELOPMENT OF E-COMMERCE 24
Palvanbayev Umidbek Uktam ugli

SCIENTIFIC AND METHODOLOGICAL FOUNDATIONS FOR INTEGRATING EXPERT ASSESSMENT AND ENTROPY METHODS IN EVALUATING THE EFFICIENCY OF ELECTRONIC DOCUMENT MANAGEMENT 29
Gaibnazarova Zilola Maxsudovna

ECONOMIC MECHANISMS FOR THE SUSTAINABLE DEVELOPMENT OF THE AGROCLUSTER COMPLEX 36
Berdimurodov U.S.

TECHNICAL EFFICIENCY AND DETERMINANTS OF CREATIVE EXPORTS: A STOCHASTIC FRONTIER ASSESSMENT WITH SCENARIO EVIDENCE FOR UZBEKISTAN 42
Daminova Madinakhon Bahromjon qizi

DEVELOPING BUSINESS CULTURE AMONG UNIVERSITY STUDENTS IN THE DIGITAL ECONOMY 47
Yusupova Dilnoza Maxmudovna

МЕХАНИЗМ УПРАВЛЕНИЯ ОБЕСПЕЧЕНИЕМ ЭКОНОМИЧЕСКОЙ БЕЗОПАСНОСТИ РЕСПУБЛИКИ УЗБЕКИСТАН В УСЛОВИЯХ ЭНЕРГЕТИЧЕСКОГО ПЕРЕХОДА 52
Якубов Дилшод Камилджанович

MPROVING INTEGRATED ORGANIZATIONAL-ECONOMIC MECHANISMS FOR POVERTY REDUCTION THROUGH DIGITAL SERVICES 57
Samiyev M. A.

SPECIFIC ASPECTS OF ORGANIZATIONAL MECHANISMS FOR THE DEVELOPMENT OF HIGHER EDUCATION SERVICES 64
Butayev Dilshod Eshbekovich

A REGIONAL CONDITIONS INDEX FOR FAMILY ENTREPRENEURSHIP AND FAMILY ENTERPRISE DENSITY: EVIDENCE FROM UZBEKISTAN'S REGIONS, INCLUDING SAMARKAND REGION 70
Iskandarov Sunnatillo Baxriddin ugli

SCIENTIFIC AND THEORETICAL APPROACHES TO STUDYING SOCIAL MARKETING IN HIGHER EDUCATION 77
Shoev Alim Khalmuratovich

IMPROVING THE MANAGEMENT AND FINANCING MECHANISMS OF INVESTMENT ACTIVITIES IN RADIO COMMUNICATION AND TELEVISION CENTRES IN THE DIGITAL ECONOMY 82
Khusanov Ulugbek Nishonovich

DEVELOPMENT OF AN ECONOMIC-MATHEMATICAL MODEL FOR THE APPLICATION OF KPI SYSTEMS IN INDUSTRIAL ENTERPRISES 88
Tursunov Orifali Samandarovich

INTERNATIONAL EXPERIENCE IN USING DIGITAL PLATFORMS FOR SMALL BUSINESS DEVELOPMENT 93
Rizayeva Nilufar Oblakulovna

ОБСЛУЖИВАНИЕ И ХРАНЕНИЕ ЭЛЕМЕНТОВ ЭКОНОМИЧНОЙ ИРРИГАЦИОННОЙ СИСТЕМЫ 101
Хакимов Баходир Бозорович

TAX BURDEN OPTIMIZATION AND INSTITUTIONAL TAX REFORMS IN UZBEKISTAN: EVIDENCE FROM INCOME TAXATION AND VAT EFFICIENCY 107
Azizjon Sadullayevich Rakhmonov

CONTENTS

MODELS OF INTERORGANIZATIONAL INTEGRATION IN LARGE CONSTRUCTION ENTERPRISES 114
Toshimov Azizbek Khakimovich

THE IMPORTANCE AND RISKS OF ARTIFICIAL INTELLIGENCE IN UZBEKISTAN: A SYNTHESIS OF OPEN SOURCES AND A SWOT ASSESSMENT IN LIGHT OF INTERNATIONAL EVIDENCE 131
Qodirova Laylo Otabekovna

EKONOMETRIK MODEL ASOSIDA NEFT VA GAZ SANOATI KORXONALARINING INVESTITSION FAOLIYATI IQTISODIY SAMARADORLIGINI PROGNOZLAŞ 139
Valikulov Şerzod Zaynitdinoviç

THE ROLE AND IMPORTANCE OF THE HUMAN RESOURCE MANAGEMENT SYSTEM IN ENTERPRISE MANAGEMENT 148
Aslanova Dilnoza Fatilloyevna

ВЛИЯНИЕ ЗАГРЯЗНЕНИЯ АТМОСФЕРНОГО ВОЗДУХА НА ЭФФЕКТИВНОСТЬ ИСПОЛЬЗОВАНИЯ ЧЕЛОВЕЧЕСКОГО КАПИТАЛА И УСТОЙЧИВОСТЬ ЭКОНОМИЧЕСКОГО РОСТА РЕГИОНОВ УЗБЕКИСТАНА 156
Динара Юсуббаева

ASSESSING THE EFFICIENCY OF THE ORGANIZATIONAL AND ECONOMIC MECHANISM FOR THE DEVELOPMENT OF TRANSPORT AND LOGISTICS SYSTEMS: A MULTI-CRITERIA APPROACH 163
Agzamova Marguba Mirabdullayevna

FRAGMENTED AGRICULTURAL PRODUCTION AND THE DEVELOPMENT POTENTIAL OF AGRICULTURAL COOPERATIVES IN UZBEKISTAN 170
Obloqulov Abdurauf Odiljon o‘g‘li

IMPROVING THE ORGANIZATIONAL AND ECONOMIC MECHANISM FOR ASSESSING AND DEVELOPING ENTREPRENEURIAL CULTURE IN THE TOURISM SERVICES SECTOR 176
Ollanazarov Bekmurod Davlatmuratovich

TOURISM FLOW MANAGEMENT AND SUSTAINABLE DEVELOPMENT IN SILK ROAD HERITAGE CITIES: A COMPARATIVE STUDY OF DUNHUANG AND SAMARKAND 186
Zheng Jie

IMPROVING STATISTICAL METHODS AND PROCESSES FOR CALCULATING THE INFLATION RATE IN THE REPUBLIC OF UZBEKISTAN 192
Umarov Muxtor Turaevich

PUBLIC DEBT MANAGEMENT AND MACROECONOMIC STABILITY IN UZBEKISTAN: DEBT DYNAMICS AND PORTFOLIO RISK ASSESSMENT 198
Sayfutdinov Xasanboy Dilshodovich

A SYSTEM OF INDICATORS FOR ASSESSING THE EFFECTIVENESS OF TECHNOLOGICAL ENTREPRENEURSHIP INCENTIVES IN THE REGIONS (THE CASE OF BUKHARA REGION) 205
Rakhmatov Jasurbek Abdurakhmonovich

ASSESSING THE EFFECTIVENESS OF INTEGRATED MARKETING COMMUNICATIONS IN REGIONAL ECONOMIC DEVELOPMENT: EVIDENCE FROM UZBEKISTAN’S REGIONS 212
Mukhsinov Bekzod Tokhirovich

ORGANIZATIONAL AND ECONOMIC MODEL OF DIGITAL TRANSFORMATION IN THE REGIONAL LIGHT INDUSTRY: MECHANISMS AND FORECAST TO 2030 (EVIDENCE FROM BUKHARA REGION, UZBEKISTAN) 218
Akhmedova Dilfuza Nuriddinovna

THE EVOLUTION OF MANAGEMENT SERVICE COMPANIES AND THE FORMATION AND DEVELOPMENT OF THE MANDATORY FEE COLLECTION SYSTEM 226
Usarov Jurabek Abdunazirovich

THE IMPACT OF INVESTMENT FLOWS ON REGIONAL ECONOMIC DEVELOPMENT: AN ECONOMETRIC ASSESSMENT OF UZBEKISTAN 232
Sapayeva Fazilat Norbayevna

INVESTIGATION OF THE EFFECT OF THERMOPLASTIC DEFORMATION ON THE MICROSTRUCTURE OF THE XH56MBKYu ALLOY 237
Saydumarov Botir Muradovich, Baxtiyorov Rustam Ravshan o‘g‘li

PANEL DATA ASSESSMENT OF THE IMPACT OF TAX EXPENDITURES ON UZBEKISTAN’S REGIONAL BUDGETS 242
Dildora Abdukarimovna Otamuradova

ORGANISATIONAL AND ECONOMIC MECHANISM FOR ENHANCING COMPETITIVENESS IN THE INFORMATION SERVICES SECTOR 254
Xudayberganov Zoxidjon Djurakulovich

EVALUATING TOURIST SATISFACTION AND PERCEIVED SERVICE QUALITY: EMPIRICAL EVIDENCE FROM MUSTAFA HOTEL IN SAMARKAND 261
Saidova Asalbegim Saidkazim qizi, Kalanova Nigora Mashrafovna, Rakhmonov Shukhrat Shavkatovich

JOB FLOWS, INTRA-CITY MIGRATION AND SPATIAL MISMATCH IN TASHKENT’S LABOUR MARKET: EVIDENCE FROM ESTABLISHMENT AND MIGRATION MICRODATA 269
Tursunova Fayoza Zaripovna

MANAGEMENT MODELS FOR ATTRACTING FOREIGN DIRECT INVESTMENT: INTERNATIONAL EXPERIENCE AND LESSONS FOR UZBEKISTAN 279
Tairbayeva Shakhnoza Utkurovna

ORGANISATIONAL AND ECONOMIC MECHANISM FOR FORMULATING AN INNOVATIVE DEVELOPMENT STRATEGY FOR INDUSTRIAL ENTERPRISES IN UZBEKISTAN 285
Bahodirov Shohruh Bahodir ugli

IMPROVING THE METHODOLOGY FOR DIGITAL ANALYSIS OF THE CONSISTENCY OF ASSESSMENT CRITERIA ACROSS ACADEMIC COURSES IN HIGHER EDUCATION INSTITUTIONS 293
Abduganiyeva Mavjuda Asatullayevna

ASSESSING THE EFFECTIVENESS OF DATA USE FOR MANAGEMENT PURPOSES WITHIN THE UNIFIED DIGITAL ECOSYSTEM OF THE HEALTHCARE SYSTEM 301
Turayeva Nafisa Odiljonovna

RISK-BASED CAPITAL ADEQUACY OF INSURANCE COMPANIES IN UZBEKISTAN: AN ADAPTED SOLVENCY II STANDARD FORMULA APPROACH 308
Usmanov Azizbek Albek o‘g‘li

AGRI-FOOD PRODUCTION, FOOD PRICES AND HOUSEHOLD INCOMES: AN ASSESSMENT OF ECONOMIC ACCESS TO FOOD IN UZBEKISTAN 315
Akhmedova Nafisa Amirddin qizi

A SYNERGETIC APPROACH TO DEVELOPING SCHOOL PRINCIPALS’ REFLECTIVE MANAGEMENT SKILLS 321
Yusupova Dilnoza Fayzullayevna

INTERMEDIARY LEAKAGE IN HERITAGE TOURISM: BOOKING PLATFORMS, TOUR OPERATORS, AND THE DISTRIBUTION OF VISITOR SPENDING AMONG SMALL HOSPITALITY OPERATORS IN SAMARKAND 326
Wei Zhibo

MIGRATION PATTERNS IN UZBEKISTAN AND REGIONAL PROJECTIONS TO 2030 333
Gulhayot Shuhratovna Abdullayeva

INSTITUTIONAL FOUNDATIONS AND THE CLUSTER SYSTEM FOR ATTRACTING INVESTMENT TO THE TEXTILE INDUSTRY IN UZBEKISTAN 341
Dilshod To‘ychi o‘g‘li Kamilov

PROSPECTS FOR THE DEVELOPMENT OF UZBEKISTAN’S TAX SYSTEM: A COMPARATIVE ANALYSIS OF INTERNATIONAL EXPERIENCE 346
Ibragimov Aziz Turayevich

CONTENTS

CONTENTS

DIGITALISATION AS A STRATEGY AGAINST THE SHADOW ECONOMY: EVIDENCE, MECHANISM DESIGN AND 2030 SCENARIOS FOR UZBEKISTAN 352
Lochin T. Rakhmanov

FROM MASS HIGHER EDUCATION TO AGRICULTURAL SKILLS: THE SUPPLY OF HUMAN CAPITAL FOR UZBEKISTAN'S AGRICULTURE AND A DEMAND-DRIVEN TRAINING MECHANISM 362
Baxtiyor Sarimsakov, Jahongir Usmonov

PROSPECTS FOR FURTHER IMPROVEMENT OF COMMERCIAL BANKS' LENDING PRACTICES FOR ENTREPRENEURIAL ACTIVITIES 370
Ergashbayev Mardonbek Ravshanbek o'g'li

DIGITAL TRANSFORMATION OF BANKING SERVICES: ENHANCING EFFICIENCY AND CUSTOMER EXPERIENCE IN REMOTE BANKING 376
Khakimov Odil Arzikulovich

INSTITUTIONAL AND ECONOMIC BARRIERS TO DIGITAL TRANSFORMATION IN ENSURING SUSTAINABLE REGIONAL ECONOMIC DEVELOPMENT: THE CASE OF THE FERGANA REGION 383
Hakimova Nozimakhon Sobirjon qizi

FACTORS INFLUENCING THE DEVELOPMENT OF SMALL AND MEDIUM-SIZED ENTERPRISES AND INDUSTRY IN THE REGIONS OF UZBEKISTAN: STATISTICAL AND ECONOMETRIC ANALYSIS AND DIRECTIONS FOR REGIONAL POLICY 389
Raimjanov Demir Raimjanhoji ugli

BASIS RISK AND TARIFF ZONING IN AREA-YIELD INDEX INSURANCE FOR WHEAT: EVIDENCE FROM SURKHANDARYA REGION, UZBEKISTAN 396
Abdullayev Alisher Sa'dulla o'g'li, Yadgarov Akram Akbarovich

KPI-LINKED INVESTMENT MECHANISM FOR TEXTILE FIRMS IN UZBEKISTAN: EVIDENCE FROM 2023–2025 402
Mushtari Dadaboyeva

MEASURING TOURISM PRICES USING TOURISM SATELLITE ACCOUNT WEIGHTS: A TOURISM PRICE INDEX FOR UZBEKISTAN 407
Jumayev Akbar Mahmudovich

BUILDING AI-ENABLED UNIVERSITY GOVERNANCE IN UZBEKISTAN THROUGH STRATEGIC MANAGEMENT CAPABILITIES 413
Marina Sagatovna Abdurashidova

REGIONAL DISPARITIES IN UZBEKISTAN'S ECONOMY: MEASURING INEQUALITY AND CONVERGENCE IN GROSS REGIONAL PRODUCT PER CAPITA IN 2024-2025 419
Shadiyev Alisher Xudoynazarovich

ENSURING SUSTAINABLE ECONOMIC DEVELOPMENT OF BUKHARA REGION THROUGH GREEN INVESTMENTS 426
Rakhimova Shakhnoza Khamzaevna

IMPROVING THE THEORETICAL AND CONCEPTUAL FOUNDATIONS OF POVERTY AND ITS REDUCTION IN THE CONTEXT OF UZBEKISTAN'S SUSTAINABLE DEVELOPMENT 431
Umarova Hulkar Umidulloyevna

ECONOMETRIC MODELS FOR FORECASTING REGIONAL ECONOMIC GROWTH AND THEIR IMPROVEMENT 436
Toshov Mirzabek Hakimovich

ПУТИ ОБЕСПЕЧЕНИЯ ЭКОНОМИЧЕСКОЙ УСТОЙЧИВОСТИ НА ОСНОВЕ СОВЕРШЕНСТВОВАНИЯ РЕГИОНАЛЬНОЙ ИНВЕСТИЦИОННОЙ ПОЛИТИКИ (НА ПРИМЕРЕ БУХАРСКОЙ ОБЛАСТИ) 441
Жумаева Зулфия Каюмовна

REGIONAL BRANDING AND TOURISM MARKETING: DEVELOPING THE HANDICRAFT AND TOURIST BRAND OF BUKHARA 446
Davlatova Nilufar Avazovna

DIGITAL TRANSFORMATION: CONCEPT, ECONOMIC ESSENCE AND IMPACT ON ORGANISATIONAL MANAGEMENT 450
Raxmonova Nilufar

ASSESSING THE ECONOMIC EFFICIENCY OF POSTAL AGENCY OUTLETS 456
Pardaboyeva Xusnora Ilxom qizi

ASSESSING THE IMPACT OF DIGITAL TRANSFORMATION ON LABOR PRODUCTIVITY IN UZBEKISTAN'S ECONOMY 463
Zikirullayeva Nilufar Dilmurod qizi

ECONOMIC ESSENCE, CLASSIFICATION AND SPECIFIC FEATURES OF INVESTMENTS IN RENEWABLE ENERGY 469
Zebiniso Ruziboyeva Umidbekovna

ECONOMETRIC MODELS OF REGIONAL AND SECTORAL EMPLOYMENT 475
Iminov Zafarbek

IMPROVING REGIONAL ECONOMIC MECHANISMS FOR INDUSTRIAL DEVELOPMENT IN THE REGIONS OF UZBEKISTAN: CONCENTRATION, INEQUALITY AND CONVERGENCE 481
Yusupova Nigina Djurayevna

ПРИОРИТЕТЫ ГОСУДАРСТВЕННОЙ ПОЛИТИКИ В ОБЛАСТИ РАЗВИТИЯ ЭНЕРГЕТИЧЕСКОГО СЕКТОРА УЗБЕКИСТАНА 489
Нигматуллаева Гулчехра Нуруллаевна

THE IMPACT OF GLOBALIZATION AND MASS CULTURE ON YOUTH SPIRITUALITY: SOCIOECONOMIC ASPECTS 495
Murodjon Nuriddinov

AN INTELLIGENT SYSTEM FOR EARLY DETECTION OF AGRICULTURAL CROP DISEASES USING DEEP LEARNING AND COMPUTER VISION TECHNOLOGIES 502
Xudoynazarov Ixtiyor Baxtiyor o'g'li

MODERN APPROACHES AND PRIORITY DIRECTIONS FOR IMPROVING THE STATE BUDGET EXPENDITURE PLANNING SYSTEM 509
Otahanov Azizbek Muhammadjonovich

ASSESSING THE EFFECTIVENESS OF REGIONAL ENTREPRENEURIAL ECOSYSTEMS AND IDENTIFYING OPPORTUNITIES FOR IMPROVEMENT: EVIDENCE FROM THE REGIONS OF UZBEKISTAN 515
Abdullayev Umidjon G'afurovich

REGIONAL DIFFERENCES IN AGRICULTURAL, INDUSTRIAL, AND SERVICE SECTOR SPECIALIZATION ACROSS THE DISTRICTS OF BUKHARA REGION 521
Sodiqova Nigora Turayevna

CONTENTS

REGIONAL DIFFERENCES IN AGRICULTURAL, INDUSTRIAL, AND SERVICE SECTOR SPECIALIZATION ACROSS THE DISTRICTS OF BUKHARA REGION

Sodiqova Nigora Turayevna
Assistant, Department of Economics,
Asia International University
E-mail: nigorasadykova667@gmail.com
ORCID: 0009-0003-7499-7958

Abstract: The article examines the territorial differentiation of specialization in agriculture, industry, and services across the eleven districts and two cities of Bukhara Region, Uzbekistan. Using official statistics for 2016–2025, location quotients and the Krugman specialization index are applied to compare the region's employment structure with the national structure. Structural shifts in industry are analyzed, and a qualitative specialization matrix and district typology are proposed. The region demonstrates specialization in agriculture (LQ = 1.05–1.20) and construction (LQ = 1.28–1.34), while market services are relatively underrepresented. Industrial output is concentrated in the chemical industry (37.4% in 2025), and hydrocarbon processing is located in a limited number of districts. Most districts retain an agricultural specialization, while services are concentrated in Bukhara City. Five types of districts are identified, and recommendations are proposed for developing agro-processing, diversifying industry, and expanding services and tourism beyond the regional center.

Key words: regional specialization, territorial division of labor, location quotient, Krugman index, district economy, Bukhara Region, Uzbekistan.

Аннотация: В статье исследуется территориальная дифференциация специализации сельского хозяйства, промышленности и сферы услуг в одиннадцати районах и двух городах Бухарской области Узбекистана. На основе официальных статистических данных за 2016–2025 гг. с использованием коэффициентов локализации и индекса специализации Кругмана проведено сопоставление структуры занятости области с общереспубликанской структурой. Проанализированы структурные сдвиги в промышленности, предложены качественная матрица специализации и типология районов. Область характеризуется специализацией в сельском хозяйстве (LQ = 1,05–1,20) и строительстве (LQ = 1,28–1,34), тогда как рыночные услуги представлены относительно менее широко. В структуре промышленного производства значительную долю занимает химическая промышленность (37,4% в 2025 г.), а переработка углеводородов сосредоточена в ограниченном числе районов. Большинство районов сохраняют аграрную специализацию, в то время как сфера услуг преимущественно сосредоточена в городе Бухаре. Выделены пять типов районов и предложены рекомендации по развитию переработки сельскохозяйственной продукции, диверсификации промышленности и расширению сферы услуг и туризма за пределами областного центра.

Ключевые слова: региональная специализация, территориальное разделение труда, коэффициент локализации, индекс Кругмана, экономика района, Бухарская область, Узбекистан.

INTRODUCTION

Districts within a single region differ in natural conditions, population density, infrastructure, and production capacity, and these differences shape the territorial division of labor. In Uzbekistan, reducing territorial disparities is an explicit policy priority. The Development Strategy of New Uzbekistan for 2022–2026 calls for regional development based on specialization [2].

Bukhara Region (40.2 thousand km², with a population of approximately 2.08 million as of 1 January 2025 [15]) combines a UNESCO-listed tourist center, substantial hydrocarbon deposits, an irrigated oasis, and extensive desert pastures. In 2025, its gross regional product (GRP) reached 86.6 trillion soums, representing

INTERNATIONAL SCIENTIFIC ELECTRONIC JOURNAL

growth of 7.2% [6]. The purpose of this article is to assess territorial differences in agricultural, industrial, and service sector specialization across the districts of the region and to substantiate directions for their further development.

LITERATURE REVIEW

Marshall demonstrated that the concentration of firms within the same industry generates external economies through pooled labor markets, specialized suppliers, and knowledge spillovers [13]. Isard systematized location quotients and coefficients of localization and specialization as instruments of regional analysis [9]. Krugman explained core–periphery patterns through increasing returns to scale, transport costs, and labor mobility [11-12], while Myrdal described cumulative causation processes that favor leading territories unless balanced by spread effects and appropriate policy measures [14].

Regarding specialization and diversification, Glaeser et al. found that urban diversity was associated with faster employment growth [5]. Duranton and Puga described diversified cities as centers for nurturing innovation [3], while Frenken, Van Oort, and Verburg demonstrated the role of related variety [4]. Kemeny and Storper distinguished between relative and absolute specialization [10], and Hidalgo et al. demonstrated how existing production structures influence the development of new economic activities [7]. Porter linked regional competitiveness to industrial clusters [17], while Hoover [8] and Krugman [12] proposed straightforward localization and specialization indices suitable for district-level analysis under conditions of limited data availability. Nevertheless, empirical research focusing specifically on districts (tumans) in Uzbekistan offers opportunities for further development.

RESEARCH METHODOLOGY

The study uses data from the National Statistics Committee (SIAT portal and official press releases) [15-16], covering employment by type of economic activity in Bukhara Region and Uzbekistan for 2023–2025, regional industrial production for 2016–2025, GRP structure, and district population. Data for 2025 are preliminary. Regional development programs and information on investment projects were also used [6]. The location quotient and the Krugman index [13] were calculated as follows:

$$LQ_i = (e_i / e) / (E_i / E) \quad (1)$$

$$K = \Sigma \, |e_i/e - E_i/E| \quad (2)$$

where e_i and e are employment in sector i and total employment in the region, and E_i and E the corresponding national values; LQ > 1 indicates relative specialization, and K ranges from 0 (identical structure) to 2. Because comparable district-level series are not published, district specialization was assessed qualitatively on a three-point scale using the location of large enterprises, land use, investment programs and approved priority directions; Tables 4 and 5 are therefore an analytical framework.

Artificial intelligence (AI) tools were used to a limited extent, accounting for approximately 10% of the overall research preparation process. Their use was primarily confined to language refinement, technical editing, and structural support. The selection of research methods, analysis and interpretation of findings, formulation of scientific conclusions, and overall responsibility for the research content remained with the author.

ANALYSIS AND RESULTS

Population Distribution. The population is unevenly distributed across the region. G‘ijduvon District and Bukhara City together account for more than 30% of the region’s population, whereas Qorovulbozor District, which hosts an oil-refining complex, accounts for only 1.0%. This highlights opportunities to strengthen the relationship between industrial output and local income generation (Table 1).

Table 1. Population of districts and cities of Bukhara region (1 January 2025)

District / city	Population, persons	Share, %
Bukhara city	300,179	14.5
Kogon city	65,500	3.2
Bukhara district	181,722	8.7
G’ijduvon district	327,477	15.8
Jondor district	188,822	9.1
Kogon district	86,323	4.2

INTERNATIONAL SCIENTIFIC ELECTRONIC JOURNAL

Olot district	105,801	5.1
Peshku district	133,479	6.4
Qorako'l district	174,269	8.4
Qorovulbozor district	20,338	1.0
Romitan district	153,503	7.4
Shofirkon district	188,398	9.1
Vobkent district	151,214	7.3
Total	2,077,025	100.0

Source: National Statistics Committee [15].

Sectoral specialization of the region. In 2022 agriculture accounted for 44.7% of the region's GRP, industry for 18.0%, construction for 8.2% and services for 29.1% [16]. Employment data allow comparison with the national structure (Table 2).

Table 2. Employment structure and location quotients, Bukhara region, 2023–2025

Sector	Bukhara, % 2023	Bukhara, % 2025	Uzbekistan, % 2025	LQ 2023	LQ 2024	LQ 2025
Agriculture, forestry and fisheries	28.5	21.9	21.0	1.19	1.20	1.05
Industry (B–E)	11.9	12.1	12.7	0.91	0.92	0.96
Construction	13.7	12.9	9.7	1.28	1.34	1.33
Services (G–S)	45.9	53.1	56.7	0.88	0.88	0.94
Krugman index K (19 activities)	–	–	–	0.183	0.216	0.142

Source: calculated by the author based on SIAT data [15]; 2025 – preliminary.

The region demonstrates agricultural specialization, although its relative intensity has declined (LQ decreased from 1.19 to 1.05), partly due to the reclassification of informal workers into other service activities. Construction remains a consistently specialized sector (LQ ≈ 1.3). Meanwhile, the Krugman specialization index declined from 0.216 to 0.142, indicating increasing convergence with the national economic structure. At the level of detailed economic activities (2025), the region demonstrates specialization in transportation and storage (LQ = 1.15), supported by the Kogon railway junction; arts and recreation (LQ = 1.38); and social services (LQ = 1.09–1.16). At the same time, information and communication (LQ = 0.36), financial activities (LQ = 0.64), professional activities (LQ = 0.59), and accommodation and food services (LQ = 0.84) exhibit potential for further development, particularly in view of the region's tourism opportunities. Structural Shifts in Industry (Table 3).

Table 3. Structure of industrial output of Bukhara region, % of total

Type of activity	2016	2020	2022	2024	2025
Mining and quarrying	9.9	1.4	1.2	0.8	0.5
Manufacturing, total	85.6	95.5	94.5	94.6	93.1
incl. chemical products	24.3	46.7	48.2	40.0	37.4
food products	25.3	15.9	13.2	19.8	24.4
textiles	19.3	17.8	19.2	18.0	14.2
furniture	0.8	0.8	0.7	1.1	3.5
Electricity, gas and steam supply	3.6	2.6	3.6	3.8	5.8
Total, billion soums	5,569.6	17,574.4	27,202.4	42,243.7	58,073.0

Source: calculated by the author based on SIAT data [15]; selected branches shown.

Industrial output increased from 5,569.6 billion soums in 2016 to 58,073.0 billion soums in 2025, representing a 10.4-fold increase at current prices. The chemical, food, and textile industries accounted for 76% of total industrial output in 2025. The share of the chemical industry approached 50% during 2020–2022, reflecting the development of new gas-chemical production capacities in the region's desert districts. Since

2024, the industrial structure has become more diversified, with increasing contributions from food processing, furniture manufacturing, and energy production. Hydrocarbon processing is concentrated in Qorovulbozor, Qorakoʻl, and, to a lesser extent, Kogon districts, while textile and food production activities are distributed across industrial clusters in Gʻijduvon, Vobkent, Romitan, Shofirkon, and Jondor. Specialization Matrix and Typology of Districts (Table 4).

Table 4. Specialization matrix of districts and cities of Bukhara region

District / city	Agri-culture	Industry	Services	Leading branches
Bukhara city	–	●●	●●●	Tourism, trade, education, health, finance
Kogon city	●	●●●	●●	Railway logistics, manufacturing, building materials
Bukhara district	●●	●●	●●	Suburban farming, food, furniture, rural tourism
Kogon district	●●	●●●	●	Electric vehicles, paper, gypsum board, petrochemicals
Qorovulbozor	●	●●●	●	Oil refining, fertilizers project
Qorakoʻl	●●	●●●	●	Gas processing, karakul, cotton
Gʻijduvon	●●●	●●	●●	Horticulture, building materials, ceramics tourism
Vobkent	●●●	●●	●	Cotton, grain, leather and textiles
Shofirkon	●●●	●	●	Horticulture, viticulture, pilgrimage tourism
Romitan	●●●	●	●	Cotton, grain, cotton-textile cluster
Jondor	●●●	●	●	Cotton, grain, livestock
Olot	●●●	●	●●	Cotton, melons, karakul, border trade
Peshku	●●●	●	●	Pastoral livestock, karakul, cotton

Note: ●●● – leading; ●● – significant; ● – weak. Source: author's assessment based on [6].

Industrial specialization is "point-like", concentrated in four territories based on hydrocarbons and large investment projects, whereas agricultural specialization is "areal": nine of eleven districts are led by agriculture, ranging from intensive horticulture in the central oasis to pastoral livestock in the desert periphery. Grouping the districts yields five types (Table 5).

Table 5. Typology of districts of Bukhara region

Type	Districts / cities	Development priorities
I. Fuel-energy and chemical	Qorovulbozor, Qorakoʻl	Deep processing, local suppliers, renewables
II. Urban service and tourism	Bukhara city	High-value tourism, IT and business services
III. Suburban agro-industrial	Kogon city and district, Bukhara district, Gʻijduvon, Vobkent	New manufacturing, agro-processing, logistics
IV. Irrigated agrarian	Romitan, Shofirkon, Jondor, Olot	Clusters, crop diversification, water saving
V. Desert agro-pastoral	Peshku; pasture zones of Qorakoʻl and Olot	Pasture management, livestock processing

Source: developed by the author.

The most productive sectors are concentrated in territories accounting for only approximately 24% of the region's population, while the majority of residents live in predominantly agricultural districts with relatively lower income levels. This pattern is consistent with the core–periphery framework [11], with the distinctive feature that the most capital-intensive industries are located in sparsely populated desert districts, where opportunities for generating wider economic benefits can be enhanced through local procurement and processing activities [14]. The key consideration is therefore to identify feasible pathways for economic diversification [4, 7]: related variety in agricultural districts, the development of hydrocarbon value chains in industrial districts, and the expansion of knowledge-intensive services in Bukhara City. The findings are subject to limitations associated with the use of employment-based location quotients (LQs), preliminary data for 2025, and expert assessments of district specialization.

CONCLUSION AND RECOMMENDATIONS

Bukhara Region demonstrates specialization in agriculture and construction, while knowledge-intensive services offer considerable potential for further development, even as the region's economic structure increasingly converges with the national structure. Industrial production is concentrated in the chemical and fuel-energy sectors, although diversification has progressed since 2024. Industrial activities are concentrated in a limited number of districts, services are predominantly located in Bukhara City, and most districts retain an agricultural specialization. The five identified district types require differentiated development policies.

Based on the findings, the following recommendations are proposed:

1. Improve the availability of district-level statistical information by regularly publishing data on economic output and employment and incorporating specialization indices into district development programs.
2. Strengthen agricultural processing and value addition through the development of industrial clusters, cold storage facilities, and packaging infrastructure in agricultural districts.
3. Enhance local economic linkages in industrial districts, particularly Qorovulbozor, Qorakoʻl, and Kogon, by developing supplier networks, expanding local procurement opportunities, and strengthening vocational training programs.
4. Promote the territorial diversification of tourism by expanding rural, pilgrimage, and handicraft tourism beyond Bukhara City to support economic opportunities in other districts.
5. Support the development of knowledge-intensive services in Bukhara City, particularly information technology, business services, and financial activities.
6. Modernize pastoral livestock production in Peshku and other desert areas through improvements in breeding practices, production efficiency, and livestock management.
7. Integrate agricultural intensification with sustainable technologies by promoting water-saving irrigation systems and renewable energy solutions to improve resource efficiency and support long-term agricultural development.

REFERENCES

1. Oʻzbekiston Respublikasi Prezidentining 28.01.2022-yildagi "2022 — 2026-yillarga moʻljallangan Yangi Oʻzbekistonning taraqqiyot strategiyasi toʻgʻrisida"gi PF-60-sonli Farmoni, https://lex.uz/ru/docs/-5841063
2. Duranton G. Diversity and Specialisation in Cities: Why, Where and When Does It Matter? / G. Duranton, D. Puga // Urban Studies. – 2000. – Vol. 37, No. 3. – P. 533–555.
3. Frenken K. Related Variety, Unrelated Variety and Regional Economic Growth / K. Frenken, F. Van Oort, T. Verburg // Regional Studies. – 2007. – Vol. 41, No. 5. – P. 685–697.
4. Glaeser E. L. Growth in Cities / E. L. Glaeser, H. D. Kallal, J. A. Scheinkman, A. Shleifer // Journal of Political Economy. – 1992. – Vol. 100, No. 6. – P. 1126–1152.
5. Government Portal of the Republic of Uzbekistan. President Reviews Reform Outcomes and Outlines Priorities for Bukhara Region [Electronic resource]. – 3 April 2026. – URL: https://gov.uz/en/news/view/149088.
6. Hidalgo C. A. The Product Space Conditions the Development of Nations / C. A. Hidalgo, B. Klinger, A.-L. Barabási, R. Hausmann // Science. – 2007. – Vol. 317, No. 5837. – P. 482–487.
7. Hoover E. M. The Measurement of Industrial Localization / E. M. Hoover // The Review of Economics and Statistics. – 1936. – Vol. 18, No. 4. – P. 162–171.
8. Isard W. Methods of Regional Analysis: An Introduction to Regional Science / W. Isard. – Cambridge, MA: MIT Press, 1960.
9. Kemeny T. Is Specialization Good for Regional Economic Development? / T. Kemeny, M. Storper // Regional Studies. – 2015. – Vol. 49, No. 6. – P. 1003–1018.
10. Krugman P. Increasing Returns and Economic Geography / P. Krugman // Journal of Political Economy. – 1991. – Vol. 99, No. 3. – P. 483–499.
11. Krugman P. Geography and Trade / P. Krugman. – Cambridge, MA: MIT Press, 1991.
12. Marshall A. Principles of Economics / A. Marshall. – London: Macmillan, 1890.
13. Myrdal G. Economic Theory and Under-Developed Regions / G. Myrdal. – London: Duckworth, 1957.
14. National Statistics Committee of the Republic of Uzbekistan. Distribution of the Employed Population by Type of Economic Activity; Volume of Industrial Production by Types of Economic Activity in Bukhara Region [Electronic resource]. – SIAT Open Data Portal, 2026. – URL: https://siat.stat.uz.
15. National Statistics Committee of the Republic of Uzbekistan. What Is the Structure of the Gross Regional Product of the Bukhara Region? [Electronic resource]. – 2023. – URL: https://stat.uz.
16. Porter M. E. Location, Competition, and Economic Development: Local Clusters in a Global Economy / M. E. Porter // Economic Development Quarterly. – 2000. – Vol. 14, No. 1. – P. 15–34.

Layout and Designer: Oloviddin Sobir o‘g‘li

2026. № 11

© When materials are reproduced, the ECONOSCITECH-INTEGRATION journal must be cited as the source. Authors are responsible for the accuracy of the information in materials and advertisements published in the journal. Editorial opinions may not always align with those of the authors. Submitted materials will not be returned to the editorial office.

To publish articles in this journal, you may submit articles, advertisements, stories, and other creative materials through the following links. Materials and advertisements are published on a paid basis.

You may subscribe to the journal at any time using the following details. Once subscribed, please send a screenshot or photo of your payment confirmation to our Telegram page @iqtisodiyot_77. Based on this, we will send the latest issue of the journal to your address each month.

Our address: Tashkent city, Yunusobod district, 19th block, House 17.