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ПАРРРАНДАЛАР ГРИППИ

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Аннотация: Ушбу мақолада паррандалар гриппи касаллигининг эпизоотологик, этиологик, патогенетик ва клиник хусусиятлари ҳамда унга қарши курашиш чора-тадбирлари ёритилган. Касаллик юқори контагиозлиги, тез тарқалиши ва катта иқтисодий зарар келтириши билан тавсифланади. Мақолада касалликнинг тарихи, дунё мамлакатларида тарқалиши, қўзғатувчининг биологик хусусиятлари, юқиш йўллари, клиник белгилари, патологоанатомик ўзгаришлари, таъхис қўйиш усуллари ва дифференциал диагностикаси баён этилган. Шунингдек, профилактика, биохавфсизлик чоралари, вакцинация ва ветеринария-санитария тадбирларининг аҳамияти кенг ёритилган. Паррандалар гриппига қарши самарали курашишда эрта диагностика, қатъий карантин ва комплекс профилактик чораларни амалга ошириш ҳал қилувчи омил экани таъкидланган.

Калит сўзлар: Септицемия, карбункула, зооантропоноз, бацилла, спорадик, атипик, антибиотик, ўчоқ, махсус ва умумий, гемофилия.

Паррандалар гриппи касаллиги вирус қўзғатадиган ўта контагиоз, ўткир кечадиган юқумли касаллик бўлиб, барча уй паррандалари ва ёввойи паррандалар ва сайроқи қушлар ҳам касалланади. Касаллик септицемия, марказий ва периферик нерв тизими, ошқозон-ичак, нафас аъзолари, кўз, бўғинлар, тож ва сирғалари яллиғланиши каби клиник белгилар кўринишида наоён бўлади. Касаллик қадимдан маълум, аммо эпизоотия, панзоотия, эпидемия, пандемия ҳолатида 2000-2007 йилларда учради. Фақатгина Туркия давлатида 2005 йилнинг 15 декабридан 2006 йил 31 январигача касаллик тарқалган ҳудудларда 1608398 бош парранда ўлдирилган ва ёқиб йўқ қилинган. Юқори патоген парранда гриппи (ЮППГ) Осиёда 2003-2004 йиллар катта талофатлар келтирди, яъни 10 мамлакатда рўйхатга олинди. Бу мамлакатларда паррандалар гриппи касаллиги қўзғатувчиси юқори патогенли Хитойда H₅N₁,

Кореяда H_5N_1 , Японияда H_5N_1 , Покистонда H_7 , Тайландда H_5N_1 , Иорданияда H_5N_1 , Комбодже H_5N_1 , Ветнамда H_5N_1 , Хиндистонда H_5N_1 , вируслари аниқланди. H_5N_1 ЮППГ нинг тарихи ва эволюцияси, репроектив ҳолатлар шуни кўрсатдики 2004 йилга келиб касалликнинг кенг тарқалишидан олдин z – генотипнинг хусусияти қуруқликда ва сувда яшовчи паррандалар организмда бир неча йиллар давомида шаклланди.

H_5N_1 ЮППГ нинг тарихи ва эволюцияси ретроспектив ҳолатлар (инсонларда ва чўчқаларда).

- Гонгконгда 2 – ҳолат, инсонларда аниқланган, Фужан вилоятида, z – генотиби.

- 2001 - 2003 йиллар Фужан вилоятида ЮППГ вируси чўчқалардан ажратиб олинган.

- 2003 йил чўчқаларда серологик текширувлар ўтказилиб (Гуангдонг вилояти) ЮППГ – вируслари тасдиқланган.

ЮППГ – эпидемиологияси

АҚШ – 2004 й товуқ ва куркаларда H_7N_2 , H_2N_2 , H_7N_3 , H_3N_2 , H_5N_2 , аниқланган.

АҚШ – 2005 йил ўрдақларда H_7N_2 аниқланган.

Канада – 2004 йил ўрдақ ва товуқларда H_7N_3 аниқланган.

Мексика – 2005 йил товуқларда H_5N_2 (LP) аниқланган.

Жанубий Африка 2006 йил товуқларда H_5N_2 аниқланган.

Миср 2006 йил ёвооғи ўрдақларда $H_{10}N_7$ аниқланган.

Италия 2005 йил куркаларда H_5N_2 аниқланган.

Юқорида фактлар шундан далolat берадики кейинги йиллар ЮППГ касаллиги жаҳон ветеринарияси ва медицинаси олдига глобал масала қўйди, у ҳам бўлса бу касалликни йўқотишнинг ҳам қарши курашнинг самарала усуллари ишлаб чиқиш.

Ана шу глобал масала ечимига бағишланган МЭБ (ХЭБ) – международное эпизоотическое бюро (ҳалқаро эпизоотик бюро) нинг 74 – генерал сессияси 21 – 26 май 2006 йил Париж шаҳрида бўлиб ўтди. Бу халқаро анжуман сессиясида Ўзбекистондан профессор Пармонов М.П., ветеринария фанлари номзоди, ЎЗВИТИ собиқ директори Бўтаев А.Қ., Ўзбекистон давлат ветеринария Бош Бошқармасининг собиқ бошлиғи Омаров Т.Б. лар қатнашди.

Музокараларда профессор Пармонов М.П. нинг “Паррандалар ЮППГ касаллигига қарши курашиш мавзусида кардинал, глобал, назарий ва амалий тадбирлар” мавзусида доклади тингланди.

Иқтисодий зарар. Касаллик ўта контагиоз ва тез тарқалади. Шиддатли кечади, 100 % гача нобуд бўлади. Хориж мамлакатларида ЮППГ касаллигида “Stamping

aut” касаллик рўйхатга олинган фермада барча паррандалар ва паррандахоналар, асбоб –анжомлар тўласинча куйдириб йўқотиш услуби ҳам қўлланилади. Бу жуда катта иқтисодий инқироз, қолаверса инсонларга ҳам юқиш хавфи эса ҳаммасидан муҳими бўлиб сиёсий ва социологик муаммодир.

Қўзғатувчиси. Парамиксовирус, полиморф вирмонлар – ипсимон, таёкчасимон, ракетка шаклидаги вируслар, барча филтрлардан ўтаолади, вирус катталиги 60 – 80 нм. Кўпинча одамларда грипп касаллиги қўзғатувчи вирионларга шаклан қиёфадор. Вирионлар 9 – 12 кунлик товуқ эмбрионларида культура ҳосил қилаолади, 12 – 14 кунлик ўрдак эмбрионларида ҳам культура ҳосил қилади. Пассаж эмбрионларда бир нечабор такрорланиши вирионлар вирулентлик даражасининг ошишини таъминлайди. Вирионлар уй паррандалари эритроцитлари, маймунлар эритроцитлари, денгиз чўчкаси, йилқилар, қорамоллар эритроцитларини агглютинацияга учратади. Касалланиб соғайган паррандалар қон зардобидан антителолар бўлиб, гемагглютинация реакциясини тормозлайди ва вирионларни нейтраллайди. Вирионлар паст ҳарорат таъсирига (музлатишга) анча чидамли, юқори ҳароратга эса чидамсиз $+100\text{ }^{\circ}\text{C}$, ҳарорат 2 – 3 минутда ўлдиради. ЮППГ – касллиги кўпинча секундар инфекция тарзида ҳам учрайди.

Эпизоотологияси. ЮППГ касаллиги билан барча турдаги уй паррандалари, ёввойи паррандалар, сайроқи қушлар касалланади, жаҳон медицинасида ва ветеринариясида чўчкаларда, одамларда ҳам рўйхатга олинганлиги қайд этилган. Йилнинг фасллари, паррандалар ёши, жинси, зоти, конституцияси касаллик пайдо бўлишида роли деярлик аниқланмаган. Вирус организмга ҳар хил йўллار билан киради, асосийси респиратор ва алиментар йўллار ҳисобланади. Вирионлар организмга киргач қон ва лимфа тизими орқали бутун организмга тарқалади. Паррандачилик фермаларига касалликнинг кириш йўллари:

- фермага бегона транспорт воситалари, одамларнинг кириши туфайли;
- бегоналар кийиши учун махсус уст-бош ва пойафзал бўлмаслиги;
- янги сотиб олинган, олиб келинган паррандаларни камида 2 ҳафта изоляторларда сақлаб, ветеринария назоратини, клиник-диагностик текширувлардан ўрқазиш;
- касал парранда ўликларини тўғри келган жойга (ариқ, кўл, кўча, дала, дарё ва ҳ.к) ташланиши;
- касал паррандалар ўликлари, маҳсулотлари, тухум, тухум пўчоқлари, инфекцияланган озиқалари куйдириб йўқ қилинмаслиги.

Патогенез. Вирионлар организмга тушгач, септицемия пайдо қилади. Бутун организм аъзоларига тарқалиб, ривожланиш жараёнида экзо ва эндотоксинлар ажратади. Бу ўз навбатида қон томирлар интима қаватига таъсир этиб, яллиғланиш–некротик жараённи келтириб чиқаради. Қон томирлар деворидан сизилиб чиқа бошлайди, гиперемия ва қон қуйилишлар содир бўлади. Юрак ва тана мушаклари дистрофик – дегенератив ўзгаришга учраб, функционал фаолияти издан чиқади. Талок, жигар, буйрак, ўпка, ошқозон-ичак ва бош мия тўқималарида ҳам интоксикация натижасида дистрофик, дегенератив ўзгаришлар кузатилади.

Кечиши ва клиник белгилари. Касалликнинг инкубацион лаври 1- 3 кун, баъзан узокроқ давом этади. Иммуниети йўқ паррандаларда касаллик оғир кечади, бу ҳолат ёш паррандаларда деярлик 100 % намоён бўлади. Нафас қийинлашади, тож ва сирғалари шишиб кўкаради, (венوز гиперемия), оёқ бўғинлари шишиб кетади, парранда оёғида тик тураолмайди. Касаллик 3-4 кун ичида ўлим билан тугайди. Асабий тизим ўзгариши туфайли оёқ ва қанотлар, бўйин фалажланади. Тухумдан қолади, ҳолсизланади, кўзини юмиб, чўнқайиб қолади. Ринит, конъюнктивит, кератит пайдо бўлади, тумшуғидан ёпишқоқ шилимшиқ оқиб туради. Касаллик шиддатли, ўткир формада кечганда қалтираш ҳосил бўлиб, парранда 1-2 кунда ўлади.

Патологоанатомик ўзгаришлар. Тожи, сирғалари кўкариб, шишиб кетади, тумшуғидан шилимшиқли суюқлик оқиб туради, бурситлар пайдо бўлиб, бўғимлар деформацияси ҳосил бўлади, шиллиқ пардаларда қон қуйилишлар кузатилади. Ринит, конъюнктивит, кератитга ҳос дистрофик ўзгаришларпайдо бўлади. Шиллиқ пардаларда, тери ости клечаткасида, бўйин кўкракларда шиш ва қон қуйилишлар бўлади. Жигилдонда ҳаво тўпланиб, озиқа ҳазм бўлмагач, у эскириб, тўхтаб қолиш натижасида, ёқимсиз кўланса ҳид чиқиб туради. Мускулли ва безли ошқозон чегарасида кучли қон қуйилиш кузатилади. Ичаклар лимфоид фолликулаларида, эпикард остида ҳам қон қуйилган бўлади. Талок бироз атрофияланади. Ўпкага қон тўлиб сал шишади ва превмония ўчоқлари пайдо бўлади. Мия қон томирлари шишиб, мияга қон қуйилиши кузатилади.

Диагноз. Эпизоотологик маълумотлар, клиник белгилари, патанатомик ўзгаришлар, лаборатория диагностик текширувлари, вирусологик текширувлар, серологик текширувлар, барчасидан олинган маълумотлар тўлиқ ўрганилиб диагноз қўйилади, лозим топилса биосинов ўтказилади. Бунда 8-10 кунлик товук эмбриони хорионалантоис пардасига юктирилади. РТГА, РА, РМА натижалари ҳам ҳисобга олинади.

Дифференциал диагноз. ЮППГ касаллигини паротиф, вирусли гепатит, пастереллёз, аэроцистит касалликларидан фарқлай билиш шарт.

– паратиф билан деярлик ёш паррандалар касалланиб, асосан ошқозон-ичак касалликларидир, асосий фарқ паратифда бактериологик текширув эндо ва бактоагар муҳитига экиш масалани очиқ – ойдин ечиб бера олади.

– вирусли гепатит ҳам асосан ёш паррандаларда учраб, деярлик барча патологоанатомик ўзгаришлар жигарда кузатилади. Лозим бўлса вирусологик текширув ўтказилади.

– пастереллёз ҳам асосан ёш паррандалар мойил бўлиб, бунда ҳам микробиологик текширув билан пастереллалар топилади.

– аэроцистит – бу юқумсиз касаллик, микробиологик текширув натижаси, микро–макроклимат кўрсаткичлари, рацион ва парвариш шарт–шароитларда бу касалликни осонгина фарқлаб бера олади.

Даволаш. Радикал даволаш, самарали эффект берувчи даволаш ишлаб чиқилмаган. Қолаверса масалага иқисодий нуқтаи – назардан ёндашилганда, инсониятга юқиш эҳтимоли бўлганлиги сабабли касал паррандалар ёқиб йўқ қилинади.

Даволаш – И.К.Кравеца (1960) касалланган паррандаларга йодни 1:1000 нисбатдаги эритмасини ичиладиган сув сифатида қўллади, биоветиннинг сувдаги эритмасини 1 бош жўжага 15–20 мг ҳисобда 1 кунда 2 марта берилади. Даволашка кунлик интервал билан такрорланади.

Иммунитет ва иммунизация – ЮППГ касаллигига қарши тирик ва ўлик вакцина ишлаб чиқилган. Вакцинациядан бир ой ўтгач трансвариал иммунитет пайдо бўлиши ўрганилган.

Қарши курашиш чоралари.

- инкубация учун соғлом хўжаликлардан тухум олиниши шарт;
- инкубаторлар албатта дезинфекция қилинади;
- паррандачилик фермер хўжалиги атрофи ўралади, кириш–чиқиш назорат пункти ўрнатилади;
- янги келтирилган паррандалар камида икки ҳафта изоляторда сақланади, шу даврда ҳар куни ветеринар врач текшируви ўтказилади;
- паррандахоналарда зоогигиеник норматив талаблар, ёруғлик, мутлоқ ва нисбий намлик, ҳарорат, ҳавонинг алмашилиш тезлиги, NH_3 , CO_2 миқдори, тўшамалар, яйратиш майдончалари ва ҳоказо стандарт талабларга мос келиши шарт;

- товуқхона хизматчилари шахсий гигиенаси, махсус уст–бош, пойафзаллари доимо назоратда бўлади;
- профилактик, режали дезинфекция, дератизация ўз вақтида сифатли ўтказилади;
- озуқаларга антибиотиклар, витаминлар, макро–микроэлементлар, сульфамидлар кўшиб рацион тузилади ва амалда бажарилади;
- паррандалар парваришига фақат тайинланган, махсус инструктаждан ўтган кишилар хизмат қилиши таъминланади;
- Ёш болалар, ҳомиладор аёллар, кекса кишилар паррандахонага киритилмайди;
- паррандалар ўлаксалари махсус кишилар томонидан целофан қопчаларга солиниб, аълоҳида ажратилган жойда қуйдириб йўқ қилинади;
- хизматчилар бир ойда камида 2 марта тиббий кўрикдан ўтиб туриши таъминланади;
- туман, вилоят давлат ветеринария бўлимлари билан узлуксиз аълоқа таъминланади;
- ветеринария қонунчилигида кўрсатилган барча талаблар малакали бажарилади;
- ветеринария хужжатлари бекамикўст тўлдирилиб, маъсулиятли киши имзоси билан тасдиқланади;
- ферма, маҳалла, худуд, туман эпизоотик харитаси бўлиши шарт.

Хулоса:

Паррандалар гриппи юқори патогенликка эга бўлган, тез тарқалувчи ва катта иқтисодий ҳамда эпизоотик аҳамиятга молик вирусли касаллик ҳисобланади. У барча турдаги уй ва ёввойи паррандаларни зарарлаб, айрим ҳолларда инсон саломатлиги учун ҳам хавф туғдиради. Касалликнинг юқори ўлим кўрсаткичи, қисқа инкубацион даври ва тез тарқалиши унинг олдини олиш чораларини доимий равишда такомиллаштиришни талаб қилади.

Касалликни барвақт аниқлаш учун эпизоотологик маълумотлар, клиник белгилари, патологоанатомик ўзгаришлар ҳамда вирусологик ва серологик лаборатория текширувлари асосида комплекс диагностика ўтказилиши лозим. Даволашнинг самарали усули мавжуд эмаслиги сабабли асосий эътибор профилактика ва биохавфсизлик чораларига қаратилиши зарур. Паррандачилик хўжаликларида қатъий ветеринария-санитария қоидаларига риоя қилиш, карантин чораларини ўз вақтида қўллаш, дезинфекция ишларини мунтазам амалга ошириш, соғлом инкубацион тухумлардан фойдаланиш, янги келтирилган паррандаларни изоляция қилиш ҳамда вакцинация тадбирларини

режали равишда ташкил этиш касалликнинг олдини олишда муҳим аҳамиятга эга.

Шунингдек, давлат ветеринария хизмати, паррандачилик хўжаликлари ва аҳоли ўртасидаги самарали ҳамкорлик, доимий мониторинг ва эпизоотик назорат паррандалар гриппининг тарқалишини чеклаш ҳамда иқтисодий йўқотишларни камайтиришнинг энг муҳим омилларидан бири ҳисобланади.

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**COMPREHENSIVE EVALUATION OF GLOBAL STRAWBERRY
(*FRAGARIA* × *ANANASSA* DUCH.) GERMPLASM UNDER GREENHOUSE
CONDITIONS AND IDENTIFICATION OF PROMISING GENOTYPES FOR
BREEDING**

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Abstract. The article presents the results of a comprehensive evaluation of 23 strawberry (*Fragaria* × *ananassa* Duch.) cultivars and breeding lines from the global germplasm collection under greenhouse conditions. Morphobiological traits, yield performance, and breeding value of the genotypes were assessed. The number of leaves, leaf area, number of flower stalks, average fruit weight, total yield, marketable yield, and marketable fruit percentage were evaluated. In addition, the cultivars and breeding lines were classified into groups according to their average fruit weight. The breeding line K-12 ("Yoqut") exhibited the highest performance in morphobiological development, large fruit size, yield, and marketability. The cultivars Albion, Murano, San Andreas, Kingsberry, Florida Beauty, and Sulhyang were also identified as promising breeding materials with high breeding value. The obtained results provide a scientific basis for selecting valuable parental materials and developing high-yielding, large-fruited, and competitive strawberry cultivars adapted to greenhouse conditions in Uzbekistan.

Keywords: strawberry, *Fragaria* × *ananassa*, global germplasm, morphobiological evaluation, yield, marketable yield, large fruit size, breeding value, greenhouse, breeding materials.

Introduction

Strawberry (*Fragaria × ananassa* Duch.) is one of the most widely cultivated berry crops in the world due to its high nutritional value, excellent flavor, and rich content of vitamins, organic acids, sugars, antioxidants, anthocyanins, and other biologically active compounds. It plays an important role in providing consumers with fresh fruit throughout the year and serves as an essential raw material for the food processing industry. Consequently, strawberry production has been steadily increasing worldwide in response to the growing demand for high-quality fresh berries [4–7].

In recent years, increasing consumer demand for fresh, high-quality berries, together with the need for off-season production, has stimulated the rapid expansion of greenhouse strawberry cultivation. Achieving high economic efficiency under protected cultivation largely depends on the development of cultivars that combine high yield, large fruit size, remontant fruiting habit, extended harvesting period, stability under environmental stress, and good adaptation to local soil and climatic conditions [5, 6, 8, 9].

The efficient utilization of global strawberry germplasm has become one of the key components of modern breeding programs. Strawberry cultivars and breeding lines developed in different countries exhibit considerable variation in their morphobiological, physiological, and agronomic characteristics and therefore represent valuable genetic resources for the improvement of economically important traits, including high yield potential, large fruit size, marketability, extended fruiting period, disease resistance, and adaptability to diverse environmental conditions [3, 7, 10–12].

Comprehensive evaluation of strawberry cultivars and breeding lines from the global germplasm collection under local greenhouse conditions provides an effective approach for assessing their adaptive potential and breeding value, identifying highly productive and competitive genotypes, and selecting superior parental materials for cultivar development. In particular, the integrated assessment of morphobiological characteristics, yield performance, and marketable fruit quality provides a reliable scientific basis for increasing breeding efficiency and developing new strawberry cultivars with high commercial value [8, 9, 13–15].

Therefore, the objective of the present study was to comprehensively evaluate the morphobiological characteristics, yield performance, and marketable fruit quality of strawberry (*Fragaria × ananassa* Duch.) cultivars and breeding lines from the global germplasm collection under greenhouse conditions, to identify valuable parental breeding materials, and to select promising genotypes for future strawberry breeding programs.

Materials and Methods

The study was conducted during 2019–2025 in greenhouses located at the Vegetable, Melon and Potato Research Institute and the Tashkent Experimental Station of the Academician M. Mirzaev Research Institute of Horticulture, Viticulture and Winemaking, Uzbekistan. The experimental material consisted of 23 strawberry (*Fragaria* × *ananassa* Duch.) cultivars and breeding lines (20 cultivars and 3 breeding lines) representing the global germplasm collection and originating from Uzbekistan, the Republic of Korea, the United States, Italy, the Netherlands, Spain, and Japan.

The cultivars and breeding lines were comprehensively evaluated for their morphobiological development, yield performance, and economically important traits. Morphological assessment included the determination of the number of leaves per plant, leaf area, number of flower stalks, and average fruit weight. Yield evaluation comprised total yield, marketable yield, and the proportion of marketable fruits. In addition, the cultivars and breeding lines were classified into fruit-size groups according to their average fruit weight, and their breeding value was comparatively assessed.

Field and laboratory observations, biometric measurements, and yield assessments were carried out during the full fruiting period using internationally accepted methodologies for strawberry evaluation. Mean values were calculated for each cultivar and breeding line, and comparative analyses were performed to determine differences among genotypes.

The experimental data were subjected to statistical analysis according to the methods recommended by Dospekhov and Litvinov [1,2]. Morphological traits, yield performance, and marketability were evaluated using internationally recognized strawberry descriptor lists, guidelines for varietal characterization and evaluation, and generally accepted scientific approaches employed in strawberry breeding research [3–15].

Results

According to the data presented in Table 1, the 23 strawberry (*Fragaria* × *ananassa* Duch.) cultivars and breeding lines from the global germplasm collection differed considerably in their morphological and biological characteristics. The number of leaves per plant ranged from 21.5 to 24.8, leaf area from 57.9 to 65.4 cm², the number of flower stalks from 8.0 to 11.3 per plant, and the average fruit weight from 19.8 to 30.6 g.

This considerable variation among the evaluated genotypes indicates a high level of genetic diversity within the global strawberry germplasm, providing valuable opportunities for the identification of promising parental materials for breeding

programs aimed at improving fruit size, yield potential, and adaptation to greenhouse cultivation conditions.

Table 1

Morphological and Biological Characteristics of Strawberry (*Fragaria × ananassa* Duch.) Cultivars and Breeding Lines

Cultivar (Breeding line)	Leaves per plant (No.)	Leaf area (cm²)	Flower stalks per plant (No.)	Average fruit weight (g)
Tong Ifori (Standard)	21.8	58.4	8.2	20.4
Seolhyang	23.6	61.8	9.5	24.8
Maehyang	22.4	60.3	9.1	22.9
Kuemsil	23.0	61.2	9.3	23.6
Aram	24.2	63.7	10.2	27.1
Kingsberry	22.6	62.8	9.0	26.5
Berrystar	23.5	62.4	9.4	25.2
Sulhyang	24.0	63.1	9.8	26.0
Albion	22.8	61.5	10.8	28.7
San Andreas	23.1	62.1	10.5	28.2
Portola	22.9	61.8	10.4	27.8
Monterey	23.2	62.4	10.3	27.5
Cabrillo	22.4	60.9	9.8	26.9
Murano	23.8	63.2	10.7	28.4
Favori	22.7	60.8	9.6	25.7
Elsanta	21.5	57.9	8.0	19.8
Sonata	21.9	58.8	8.4	21.5
Florida Beauty	23.3	62.6	10.4	27.9
Harmony	22.5	60.5	9.2	24.6
Tochiotome	22.1	59.6	8.9	23.8
K-12 ("Yoqut")	24.8	65.4	11.3	30.6
M-11	22.8	61.3	9.5	24.9
K-83	23.0	61.7	9.7	25.5

According to the data presented in Table 2, the 23 strawberry (*Fragaria × ananassa* Duch.) cultivars and breeding lines from the global germplasm collection differed considerably in terms of fruit weight, yield performance, and marketability. The average fruit weight ranged from 24.6 to 39.8 g, total yield from 19.3 to 27.2 t

ha⁻¹, marketable yield from 17.4 to 26.5 t ha⁻¹, and the proportion of marketable fruits from 90.2 to 97.4%. These results indicate substantial genetic variation among the evaluated genotypes with respect to productivity and fruit market quality.

The highest average fruit weight was recorded for the breeding line K-12 ("Yoqut"), reaching 39.8 g. Relatively large fruits were also produced by Kingsberry (36.8 g), Albion (35.4 g), Murano (35.0 g), San Andreas (34.2 g), Florida Beauty (34.0 g), Portola (33.8 g), Monterey (33.5 g), and Cabrillo (32.8 g). In contrast, the lowest average fruit weight was observed in Elsanta (24.6 g), followed by Sonata (25.4 g) and the standard cultivar Tong Ifori (26.8 g).

Analysis of total yield revealed that the breeding line K-12 ("Yoqut") produced the highest yield (27.2 t ha⁻¹), corresponding to 132.7% of the standard cultivar Tong Ifori. High total yields were also recorded for Albion (26.6 t ha⁻¹; 129.8%), Murano (26.3 t ha⁻¹; 128.3%), San Andreas (25.8 t ha⁻¹; 125.9%), Florida Beauty (25.6 t ha⁻¹; 124.9%), Portola (25.4 t ha⁻¹; 123.9%), Kingsberry (25.2 t ha⁻¹; 122.9%), and Monterey (25.0 t ha⁻¹; 122.0%). The lowest total yield was recorded for Elsanta (19.3 t ha⁻¹), which was lower than that of the standard cultivar.

Marketable yield exhibited a similar trend. The highest marketable yield was obtained from K-12 ("Yoqut") (26.5 t ha⁻¹), followed by Albion (25.6 t ha⁻¹), Murano (25.3 t ha⁻¹), San Andreas (24.7 t ha⁻¹), Florida Beauty (24.5 t ha⁻¹), Portola (24.3 t ha⁻¹), Kingsberry (24.1 t ha⁻¹), and Monterey (23.8 t ha⁻¹). The lowest marketable yields were recorded for Elsanta (17.4 t ha⁻¹), Sonata (18.0 t ha⁻¹), and the standard cultivar Tong Ifori (18.7 t ha⁻¹).

The proportion of marketable fruits ranged from 90.2% to 97.4%. The highest value was recorded for K-12 ("Yoqut") (97.4%), followed by Albion and Murano (96.2%), San Andreas, Portola, and Florida Beauty (95.7%), Kingsberry (95.6%), and Monterey (95.2%). Cabrillo and M-11 each produced 95.0% marketable fruits. The lowest proportions were observed in Elsanta (90.2%), Sonata (90.9%), and the standard cultivar Tong Ifori (91.2%).

Statistical analysis confirmed significant differences among the evaluated genotypes. The least significant difference (LSD_{0.05}) was 0.85 t ha⁻¹ for total yield and 0.78 t ha⁻¹ for marketable yield, while the experimental error (S_x) was 2.5% and 2.4%, respectively. These values indicate a high level of experimental precision and reliability of the obtained results.

Overall, the comparative evaluation demonstrated that the breeding line K-12 ("Yoqut") exhibited superior performance for average fruit weight, total yield, marketable yield, and marketability. In addition, Albion, Murano, San Andreas, Kingsberry, Florida Beauty, and Portola also showed excellent agronomic

performance. These genotypes can therefore be considered valuable parental materials for strawberry breeding aimed at developing high-yielding, large-fruited, and commercially competitive cultivars adapted to greenhouse production conditions in Uzbekistan.

Table 2.

Yield and Marketability of Strawberry (*Fragaria × ananassa* Duch.) Cultivars and Breeding Lines

Cultivar (Breeding line)	Average fruit weight (g)	Total yield (t ha⁻¹)	Relative to the standard (%)	Marketable yield (t ha⁻¹)	Marketable fruits (%)
Tong Ifori (Standard)	26.8	20.5	100.0	18.7	91.2
Seolhyang	31.2	22.9	111.7	21.6	94.3
Maehyang	29.8	22.2	108.3	20.8	93.7
Kuemsil	30.5	22.6	110.2	21.3	94.2
Aram	31.0	23.0	112.2	21.7	94.3
Kingsberry	36.8	25.2	122.9	24.1	95.6
Berrystar	30.2	22.5	109.8	21.2	94.2
Sulhyang	31.5	23.3	113.7	22.1	94.8
Albion	35.4	26.6	129.8	25.6	96.2
San Andreas	34.2	25.8	125.9	24.7	95.7
Portola	33.8	25.4	123.9	24.3	95.7
Monterey	33.5	25.0	122.0	23.8	95.2
Cabrillo	32.8	23.8	116.1	22.6	95.0
Murano	35.0	26.3	128.3	25.3	96.2
Favori	31.6	23.1	112.7	21.8	94.4
Elsanta	24.6	19.3	94.1	17.4	90.2
Sonata	25.4	19.8	96.6	18.0	90.9
Florida Beauty	34.0	25.6	124.9	24.5	95.7
Harmony	30.8	22.8	111.2	21.5	94.3
Tochiotome	29.4	22.0	107.3	20.7	94.1
K-12 ("Yoqut")	39.8	27.2	132.7	26.5	97.4
M-11	32.4	21.8	106.3	20.7	95.0

K-83	31.8	22.4	109.3	21.2	94.6
LSD_{0.05}	—	0.85	—	0.78	—
Sx (%)	—	2.5	—	2.4	—

Marketable yield also differed considerably among the evaluated genotypes. The highest marketable yield was obtained from the breeding line K-12 ("Yoqut"), reaching 26.5 t ha⁻¹. This was followed by Albion (25.6 t ha⁻¹), Murano (25.3 t ha⁻¹), San Andreas (24.7 t ha⁻¹), Florida Beauty (24.5 t ha⁻¹), Portola (24.3 t ha⁻¹), and Kingsberry (24.1 t ha⁻¹). In these cultivars, marketable yield accounted for 95.6–97.4% of the total yield, indicating their excellent commercial quality and suitability for greenhouse production.

Considerable variation was also observed in the proportion of marketable fruits. The highest value was recorded for the breeding line K-12 ("Yoqut") (97.4%). Similarly, high percentages of marketable fruits were observed in Albion and Murano (96.2%), San Andreas, Portola, and Florida Beauty (95.7%), as well as Kingsberry (95.6%). In contrast, relatively lower values were recorded for Elsanta (90.2%), Sonata (90.9%), and the standard cultivar Tong Ifori (91.2%).

Statistical analysis confirmed significant differences among the evaluated genotypes for both total and marketable yield. The least significant difference (LSD_{0.05}) was 0.85 t ha⁻¹ for total yield and 0.78 t ha⁻¹ for marketable yield. The relative experimental error (Sx) was 2.5% and 2.4%, respectively, demonstrating the high precision and reliability of the experimental data.

Overall, the comprehensive evaluation of yield performance and marketability revealed substantial breeding differences among the strawberry cultivars and breeding lines. In particular, the breeding line K-12 ("Yoqut") exhibited superior performance in average fruit weight, total yield, marketable yield, and the proportion of marketable fruits. Furthermore, Albion, Murano, San Andreas, Kingsberry, Florida Beauty, and Portola also demonstrated outstanding agronomic performance, combining high productivity, large fruit size, and excellent marketability. These genotypes can therefore be recommended as valuable parental materials for breeding new high-yielding and commercially competitive strawberry cultivars adapted to greenhouse cultivation conditions in Uzbekistan.

According to the data presented in Table 3, the 23 strawberry (*Fragaria* × *ananassa* Duch.) cultivars and breeding lines from the global germplasm collection were classified into four fruit-size groups based on average fruit weight. The

classification demonstrated a close relationship between fruit size, yield performance, and marketability.

The small-fruited group (24.0–28.0 g) included the standard cultivar Tong Ifori, Elsanta, and Sonata, comprising three cultivars (13.0%) of the entire collection. This group produced an average total yield of 19.9 t ha⁻¹, a marketable yield of 18.0 t ha⁻¹, and 90.8% marketable fruits. These values were lower than those of the other groups, indicating their relatively limited yield potential.

The medium-fruited group (28.1–33.0 g) represented the largest proportion of the collection and included Seolhyang, Maehyang, Kuemsil, Aram, Berrystar, Sulhyang, Cabrillo, Favori, Harmony, Tochiotome, K-83, and M-11. This group consisted of 12 cultivars and breeding lines (52.2%) and achieved an average total yield of 22.6 t ha⁻¹, a marketable yield of 21.3 t ha⁻¹, and 94.4% marketable fruits, clearly outperforming the small-fruited group.

The large-fruited group (33.1–37.0 g) included Kingsberry, Albion, Murano, San Andreas, Portola, Monterey, and Florida Beauty, accounting for seven cultivars (30.4%) of the collection. This group produced an average total yield of 25.5 t ha⁻¹, a marketable yield of 24.6 t ha⁻¹, and 95.9% marketable fruits, demonstrating the superior productivity and commercial quality associated with large-fruited strawberry cultivars.

Table 3.

Classification of Strawberry (*Fragaria* × *ananassa* Duch.) Cultivars and Breeding Lines According to Fruit Weight and Yield Performance

N o.	Group	Average fruit weight (g)	Cultivars and breeding lines	Number of genotypes	Proportion (%)	Average total yield (t ha ⁻¹)	Average marketable yield (t ha ⁻¹)	Marketable fruits (%)
1	Small-fruited	24.0–28.0	Tong Ifori (Standard), Elsanta, Sonata	3	13.0	19.9	18.0	90.8

2	Medium-fruited	28.1–33.0	Seolhyan g, Maehyan g, Kuemsil, Aram, Berrystar , Sulhyang , Cabrillo, Favori, Harmony , Tochioto me, K-83, M-11	12	52.2	22.6	21.3	94.4
3	Large-fruited	33.1–37.0	Kingsberry, Albion, Murano, San Andreas, Portola, Monterey, Florida Beauty	7	30.4	25.5	24.6	95.9
4	Very large-fruited	≥37.1	K-12 ("Yoqut")	1	4.4	27.2	26.5	97.4
	Total	24.0–39.8	20 cultivars and 3 breeding lines	23	100.0	23.1	21.9	94.6

The very large-fruited group (≥ 37.1 g) consisted exclusively of the breeding line K-12 ("Yoqut"). Although this genotype represented only 4.4% of the evaluated collection, it demonstrated the highest performance for all assessed traits. Specifically, it produced an average fruit weight of 39.8 g, a total yield of 27.2 t ha⁻¹, a marketable yield of 26.5 t ha⁻¹, and a marketable fruit proportion of 97.4%.

Overall, the classification of strawberry cultivars and breeding lines according to fruit weight revealed a clear positive relationship between fruit size, total yield, marketable yield, and the proportion of marketable fruits. As fruit size increased, both yield performance and fruit marketability improved consistently. In particular, the large- and very large-fruited genotypes, including Kingsberry, Albion, Murano, San Andreas, Portola, Monterey, Florida Beauty, and the breeding line K-12 ("Yoqut"), exhibited superior agronomic performance under greenhouse conditions. These genotypes combined large fruit size, high productivity, and excellent marketability, making them valuable parental materials for breeding new high-yielding and commercially competitive strawberry cultivars adapted to greenhouse production in Uzbekistan.

This study demonstrates that fruit-size classification is an effective approach for identifying superior breeding materials and can be successfully applied in strawberry breeding programs aimed at improving yield potential and fruit quality under protected cultivation systems.

Conclusions

1. The evaluation of 23 strawberry (*Fragaria* × *ananassa* Duch.) cultivars and breeding lines from the global germplasm collection revealed a high level of genetic diversity in morphological, biological, and agronomically important traits. This diversity provides a valuable genetic basis for the development of improved strawberry cultivars.
2. According to the morphobiological assessment, the breeding line K-12 ("Yoqut") exhibited the best performance, recording the highest number of leaves (24.8 per plant), largest leaf area (65.4 cm²), greatest number of flower stalks (11.3 per plant), and highest average fruit weight (39.8 g). These characteristics identify it as one of the most valuable genotypes for future breeding programs.
3. Yield evaluation demonstrated that K-12 ("Yoqut") achieved the highest total yield (27.2 t ha⁻¹), marketable yield (26.5 t ha⁻¹), and proportion of marketable fruits (97.4%). In addition, Albion, Murano, San Andreas, Kingsberry, Florida Beauty, and Portola also exhibited excellent yield performance and marketability, indicating their high breeding value.

4. Classification of cultivars according to average fruit weight demonstrated a clear positive relationship between fruit size and yield performance. Large- and very large-fruited genotypes consistently produced higher total yield, marketable yield, and marketable fruit percentage than small-fruited cultivars under greenhouse conditions.
5. Based on the comprehensive evaluation, the breeding line K-12 ("Yoqut"), together with the cultivars Albion, Murano, San Andreas, Kingsberry, Florida Beauty, and Portola, are recommended as promising parental materials for breeding new high-yielding, large-fruited, and commercially competitive strawberry cultivars adapted to greenhouse production conditions in Uzbekistan.

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ВОЗМОЖНОСТИ УВЕЛИЧЕНИЯ ФИНАНСОВЫХ РЕСУРСОВ ДЛЯ МАЛОГО И СРЕДНЕГО БИЗНЕСА В УЗБЕКИСТАНЕ

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Аннотация

В настоящей работе проанализированы тенденции развития механизмов финансовой поддержки субъектов малого и среднего бизнеса в Узбекистане. Освещена деятельность институциональных структур, сформированных на основании Указа Президента Республики Узбекистан № УП-50 и Постановления Президента № ПП-306, — «Банка развития бизнеса», «Компании развития предпринимательства», «Фонда развития малого бизнеса», а также региональных центров содействия. На основе системы микрокредитования, программы «Первый шаг в бизнес» и возможностей привлечения ресурсов международных финансовых институтов разработаны выводы и предложения по расширению финансовых ресурсов.

Ключевые слова: *малый и средний бизнес, финансовые ресурсы, микрокредитование, поддержка предпринимательства, инвестиции, государственные программы.*

Введение

В условиях рыночной экономики устойчивое развитие малого и среднего бизнеса является одним из важнейших факторов экономического роста страны. Оно играет значительную роль в обеспечении занятости населения, формировании конкурентной среды и насыщении местных рынков разнообразными товарами и услугами. При этом потребность субъектов малого и среднего предпринимательства в финансовых ресурсах остаётся одной из наиболее актуальных проблем их деятельности.

В последние годы руководством Республики Узбекистан осуществляется ряд правовых и институциональных реформ, направленных на решение данной проблемы. В частности, принятый 19 марта 2025 года Указ Президента № УП-50 и Постановление Президента № ПП-306 от 14 сентября 2023 года служат коренному обновлению системы финансовой поддержки малого и среднего бизнеса. Цель настоящей работы заключается в анализе механизмов финансовой поддержки, сформированных на основании данных нормативных документов, и разработке предложений по их дальнейшему совершенствованию.

Сегодня значение малого и среднего предпринимательства в устойчивом развитии экономики страны неуклонно возрастает. В связи с этим одним из приоритетных направлений государственной политики является совершенствование системы финансовой поддержки субъектов предпринимательства и удовлетворение их потребности в кредитных ресурсах. В Указе Президента № УП-50, подписанном Президентом Ш. Мирзиёевым, определена задача формирования благоприятной среды для ускоренного роста малого и среднего бизнеса, включая коренное обновление механизмов финансирования (Президент Республики Узбекистан, 2025).

Важнейшим нововведением в данном направлении стало создание отдельных центров малого бизнеса при банковских отделениях в каждой области и районе. Эти центры оказывают практическую помощь не только в финансировании, но и в преобразовании предпринимательской идеи в бизнес-проект: обучение начинающих предпринимателей, привлечение необходимых специалистов, консультирование по вопросам бухгалтерского учёта, налогообложения, права и маркетинга. В результате вновь создаваемые предприятия получают возможность быстрее осваивать современные технологии и эффективно организовывать производство продукции (Мирзиёев, 2023).

Следует особо отметить создание «Банка развития бизнеса» и «Компании развития предпринимательства» в качестве институциональной основы расширения финансовых ресурсов. Через эти структуры более чем 35 тысячам предпринимателей были выделены микрокредиты в среднем по 100 миллионов сумов на общую сумму около 3,5 трлн сумов. Помимо этого, в рамках программы «Первый шаг в бизнес», реализуемой с целью поддержки граждан, только начинающих предпринимательскую деятельность, 115 тысячам человек были предоставлены микрозаймы на сумму 1 трлн сумов. Данные показатели свидетельствуют о реальном внимании государства к финансированию малого предпринимательства (Мирзиёев, 2024).

Особо следует отметить, что данным фондам предоставлено право самостоятельно привлекать внешние инвестиции, благодаря чему в предстоящем году планируется привлечь для среднего бизнеса дополнительные инвестиции в объёме 1 млрд долларов США. Такой подход не только снижает зависимость от средств государственного бюджета, но и углубляет интеграцию с международными финансовыми рынками (Мирзиёев, 2023).

Ещё одной важной правовой основой финансовой поддержки малого бизнеса является Постановление Президента № ПП-306 от 14 сентября 2023 года, в соответствии с которым с 1 октября 2023 года запущена комплексная программа

«Непрерывная поддержка малого бизнеса». В рамках программы в течение 2023–2026 годов предусмотрено направление 6 трлн сумов государственных средств, а также дополнительно 1,2 млрд долларов США от международных финансовых институтов. Кроме того, в структуре «Банка развития бизнеса» создан «Фонд развития малого бизнеса», на базе которого в регионах действуют 14 «Территориальных центров содействия малому бизнесу». Через данные центры предоставляется комплекс услуг: отбор проектов, обучение инициаторов, финансирование, подготовка бизнес-планов и технико-экономических обоснований, а также содействие в поиске рынков сбыта (Президент Республики Узбекистан, 2023).

Следует отметить, что, несмотря на достигнутые успехи, равный доступ к финансовым ресурсам пока не обеспечен во всех регионах в одинаковой степени. В отдельных исследованиях отмечается, что лишь небольшая часть малого бизнеса направлена в отрасли, создающие высокую добавленную стоимость, что указывает на необходимость устранения отраслевого и регионального неравенства в распределении финансовых ресурсов (Байзакова, 2025).

Заключение и предложения

Проведённый анализ показывает, что в Узбекистане создана значительная институциональная и правовая база для увеличения финансовых ресурсов малого и среднего бизнеса. Вместе с тем, в целях дальнейшего совершенствования данной системы разработаны следующие предложения:

1. Выравнивание системы микрокредитования в региональном разрезе, в частности упрощение доступа к кредитным ресурсам в отдалённых и слаборазвитых районах;
2. Расширение механизмов привлечения международных инвестиций «Фондом развития малого бизнеса» и обеспечение данного процесса прозрачной системой мониторинга;
3. Введение приоритетных льгот при финансировании проектов, создающих высокую добавленную стоимость и ориентированных на экспорт;
4. Ежегодное расширение таких программ, как «Первый шаг в бизнес», с учётом числа вновь начинающих предпринимателей;
5. Разработка дополнительных правовых льгот, стимулирующих участие частных и международных финансовых институтов наряду с банковскими и государственными средствами.

Последовательная реализация данных мер будет способствовать увеличению доли малого и среднего бизнеса в национальной экономике, созданию новых рабочих мест и укреплению экономической стабильности страны.

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IXTISOSLASHTIRILGAN MAKTAB-INTERNATLARIDA MUSIQA NAZARIYASI FANINI ANIQ FANLAR ORQALI INTEGRATSIYALASH

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Musiqa ta'limi va san'at yo'nalishi

Annotatsiya

Mazkur maqolada ixtisoslashtirilgan maktab-internatlarida musiqa nazariyasi fanini aniq fanlar bilan integratsiyalashning ilmiy-pedagogik asoslari yoritilgan. Musiqa nazariyasi mazmunidagi ritm, metr, temp, interval, tovush balandligi, chastota, musiqiy shakl va raqamli nota yozuvi kabi tushunchalarning matematika, fizika hamda informatika fanlari bilan uzviy aloqadorligi tahlil qilingan. Maqolada fanlararo integratsiyaning o'quvchilarda musiqiy-analitik tafakkur, mantiqiy fikrlash, matematik tasavvur, musiqiy eshitish va raqamli kompetensiyalarni rivojlantirishdagi imkoniyatlari asoslab beriladi. Shuningdek, musiqa nazariyasi darslarida qo'llash mumkin bo'lgan integrativ yondashuvning mazmuniy va metodik yo'nalishlari taklif etiladi. Tadqiqot natijasida musiqa nazariyasini aniq fanlar bilan integratsiyalash o'quv materialini yaxlit idrok etish va nazariy bilimlarni amaliy faoliyat bilan bog'lashga xizmat qiluvchi istiqbolli pedagogik yondashuv ekanligi asoslanadi.

Kalit so'zlar: musiqa nazariyasi, fanlararo integratsiya, matematika, fizika, informatika, ritm, metr, interval, chastota, musiqiy tafakkur, ixtisoslashtirilgan maktab-internat, integrativ ta'lim.

Abstract

This article examines the scientific and pedagogical foundations of integrating music theory with exact sciences in specialized boarding schools. The interrelationships between such concepts of music theory as rhythm, meter, tempo, interval, pitch, frequency, musical form and digital notation, and the disciplines of mathematics, physics and computer science are analyzed. The article substantiates the potential of interdisciplinary integration for developing students' musical-analytical thinking, logical reasoning, mathematical understanding, musical perception and digital competencies. Methodological directions for applying an integrative approach in music theory lessons are also proposed. The study demonstrates that integrating music theory with exact sciences represents a promising pedagogical approach that facilitates holistic understanding of educational content and connects theoretical knowledge with practical musical activities.

Keywords: music theory, interdisciplinary integration, mathematics, physics, computer science, rhythm, meter, interval, frequency, musical thinking, specialized boarding school, integrative education.

Zamonaviy ta'lim tizimida o'quvchilarning muayyan fan doirasidagi bilimlarini shakllantirish bilan bir qatorda, turli fanlar o'rtasidagi mazmuniy va metodologik aloqalarni anglash qobiliyatini rivojlantirish muhim vazifalardan biri sifatida qaralmoqda. Ayniqsa, ixtisoslashtirilgan ta'lim muassasalarida o'quvchilarning individual qobiliyatlarini rivojlantirish, ularning nazariy bilimlarini amaliy faoliyat bilan bog'lash hamda fanlararo fikrlash kompetensiyasini shakllantirish ta'lim mazmunini yangicha tashkil etishni talab qiladi.

Musika ta'limi o'z tabiatiga ko'ra badiiy-estetik yo'nalishga ega bo'lsa-da, uning nazariy asoslari ko'plab aniq fanlar bilan bevosita bog'liqdir. Xususan, musiqiy ritm va metr vaqtning matematik taqsimlanishiga, tovush balandligi va tembr fizik jarayonlarga, zamonaviy musiqiy texnologiyalar esa informatika va raqamli texnologiyalarga asoslanadi. Musika va matematika o'rtasidagi bog'liqlik faqat nazariy mulohaza emas. Ilmiy tadqiqotlarda musika va matematika umumiy ramziy hamda abstrakt operatsiyalarni talab qilishi, musiqiy ritm va nota davomiyliklarini kasr tushunchalari bilan bog'lash mumkinligi ko'rsatilgan. Shu sababli musika nazariyasini aniq fanlar bilan integratsiyalash masalasini ixtisoslashtirilgan maktab-internatlaridagi musika ta'limining ilmiy-metodik yo'nalishlaridan biri sifatida tadqiq etish dolzarb hisoblanadi.

Musika nazariyasini aniq fanlar bilan integratsiyalashning nazariy mohiyati

Fanlararo integratsiya turli fanlarga oid bilim, tushuncha, metod va faoliyat turlarini yagona ta'limiy maqsad asosida o'zaro bog'lashni anglatadi. Bunda integratsiya fanlarning chegaralarini yo'qotish emas, balki ularning o'ziga xos imkoniyatlaridan foydalanib, o'quv predmetini chuqurroq anglashga sharoit yaratish sifatida qaraladi. Musika nazariyasi fanining mazmunida integratsiya uchun tabiiy asos mavjud. Chunki musiqiy tovushlar, ritmik tuzilmalar, intervallar, lad va garmonik munosabatlar, musiqiy shakl va raqamli musika texnologiyalarining barchasi muayyan miqdoriy, fizik yoki algoritmik munosabatlar bilan bog'liq.

Musika nazariyasi va matematika integratsiyasi

Musika nazariyasi va matematika o'rtasidagi eng yaqqol bog'liqlik ritm, metr va vaqt birliklarida namoyon bo'ladi. Nota davomiyliklari o'zaro aniq matematik nisbatlarga ega. Masalan, bir chorak nota ikki nimchorak notaga, to'rtta o'n olitalik notaga teng. Bu munosabatni $1/2 = 2/4 = 4/8$ tarzida ifodalash mumkin. Takt o'lchovlarini

o'rganishda ham matematik tushunchalardan foydalanish mumkin. Masalan, $2/4$, $3/4$ va $4/4$ o'lchovlarida surat takt ichidagi zarblar sonini, maxraj esa asosiy vaqt birligini ifodalashini matematik model orqali tushuntirish mumkin. Bundan tashqari, temp tushunchasini ham matematika bilan bog'lash mumkin. Agar musiqiy asar tempi bir daqiqada 60 zarbni tashkil qilsa, 5 daqiqalik ijro davomida taxminan 300 asosiy zarb yuzaga keladi: $60 \times 5 = 300$. Musiqa va matematika integratsiyasining pedagogik imkoniyatlarini ko'rsatuvchi tadqiqotlarda ritmik tuzilmalarni kasrlar bilan bog'lash asosidagi mashg'ulotlar o'rganilgan. Masalan, "MusiMath" dasturida nota davomiyliklari matematik kasrlar bilan bevosita bog'langan. Shuningdek, keyingi tadqiqotlarda musiqa va matematika integratsiyasi o'quvchilarning kreativ fikrlashiga ham ijobiy ta'sir ko'rsatishi mumkinligi ko'rsatilgan.

Demak, matematika musiqa nazariyasida faqat yordamchi fan emas, balki ayrim musiqiy tushunchalarning ichki tuzilishini ochib beruvchi analitik vosita sifatida namoyon bo'lishi mumkin.

Musiqa nazariyasi va fizika integratsiyasi

Musiqa nazariyasini fizika bilan integratsiyalash, avvalo, tovushning fizik tabiatini o'rganish bilan bog'liq. Tovushning balandligi uning chastotasi bilan bog'liq bo'lib, chastota gerslarda o'lchanadi. Chastota oshgani sari tovush balandligi ortadi. Shu sababli musiqa nazariyasidagi "tovush balandligi" tushunchasini fizikaning "chastota" tushunchasi bilan bog'lash o'quvchiga musiqiy hodisaning fizik asosini anglash imkonini beradi. Oktava munosabati ham chastotalar nisbati orqali ifodalanishi mumkin: $f_2 = 2f_1$. Masalan, ma'lum bir tovushning chastotasi 220 Hz bo'lsa, undan yuqori oktavadagi mos tovush chastotasi 440 Hz bo'ladi. Fizika bilan integratsiya qilishda tembr tushunchasi ham muhimdir. Turli cholg'u asboblari bir xil balandlikdagi tovushni ijro etgan taqdirda ham ularning ovoz rangi bir-biridan farq qiladi. Buning sabablaridan biri tovush tarkibidagi obertonlar va garmonik komponentlarning o'ziga xos nisbatidir.

Shu tariqa "tovush", "chastota", "amplituda", "rezonans", "tembr" kabi tushunchalarni musiqa va fizika fanlarining umumiy obyekti sifatida o'rganish mumkin.

Integratsiyalashgan yondashuvning metodik modeli

Musiqa nazariyasi fanini aniq fanlar orqali integratsiyalashda dars mazmuni quyidagi mantiqiy ketma-ketlik asosida tashkil etilishi mumkin: musiqiy hodisa $\rightarrow$ muammoli savol $\rightarrow$ aniq fan bilan bog'lash $\rightarrow$ analitik hisoblash yoki modellashtirish $\rightarrow$ musiqiy amaliyot $\rightarrow$ xulosa. Masalan, "Ritm va metr" mavzusida o'qituvchi avval musiqiy ritmik namunani tinglatadi. O'quvchilar uning metr va ritmik tuzilishini aniqlaydilar. Keyingi bosqichda nota davomiyliklari matematik kasrlar yordamida ifodalanadi.

Soʻngra oʻquvchilar berilgan takt oʻlchoviga mos yangi ritmik formula tuzadilar va uni ijro etadilar. Bu jarayonda uch xil faoliyat birlashadi: eshitish, hisoblash va ijro. Shu jihatdan integratsiyalashgan dars oddiy nazariy tushuntirishdan koʻra faoliyatga yoʻnaltirilgan xarakter kasb etadi. Musiqa nazariyasi fanini aniq fanlar bilan integratsiyalashda asosiy metodik talab — integratsiyaning tabiiy va maqsadli tashkil etilishidir. Boshqa fan elementlarini shunchaki darsga kiritish integrativ taʼlimni anglatmaydi. Integratsiya musiqiy mazmunni chuqurroq tushuntirishga xizmat qilishi lozim. Musiqa va matematika oʻrtasidagi bogʻliqlikni oʻrganish boʻyicha mavjud ilmiy tadqiqotlar istiqbolli pedagogik imkoniyatlarni koʻrsatsa-da, bunday natijalarni barcha yosh guruhlari va taʼlim sharoitlariga avtomatik tarzda koʻchirish mumkin emas. Shu sababli ixtisoslashtirilgan maktab-internatlarining oʻziga xos sharoiti, oʻquvchilarning musiqiy tayyorgarligi va taʼlim mazmuni hisobga olinishi kerak. Shu nuqtayi nazardan mazkur yoʻnalish keyingi tadqiqotlarda integrativ topshiriqlar tizimini ishlab chiqish, ularning pedagogik samaradorligini mezonlar asosida baholash hamda tajriba-sinov orqali tekshirishni talab qiladi.

Xulosa

Ixtisoslashtirilgan maktab-internatlarida musiqa nazariyasi fanini aniq fanlar orqali integratsiyalash oʻquvchilarning musiqiy bilimlarini tizimlashtirish, nazariy tushunchalarni amaliy faoliyat bilan bogʻlash va fanlararo tafakkurni rivojlantirish uchun muhim pedagogik imkoniyat yaratadi.

Matematika bilan integratsiya ritm, metr, nota davomiyligi, temp va musiqiy tuzilmalardagi miqdoriy munosabatlarni ochib berishga; fizika bilan integratsiya tovushning fizik tabiatini, chastota, amplituda va tembr kabi tushunchalarni ilmiy asoslashga; informatika bilan integratsiya esa musiqiy bilimlarni raqamli texnologiyalar orqali modellashtirish va amaliy qoʻllashga imkon beradi.

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**THE HUMAN GUT MICROBIOTA AS A RESISTOME CARRYING
ANTIBIOTIC RESISTANCE GENES: A HIDDEN EPIDEMIOLOGICAL
THREAT TO PUBLIC HEALTH**

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Abstract. The human gut microbiota represents one of the largest microbial ecosystems in the human body and functions not only as a physiological community but also as a substantial reservoir of antibiotic resistance genes (ARGs), collectively referred to as the gut resistome. The presence of ARGs in commensal bacteria is not necessarily equivalent to clinical antibiotic resistance; however, mobile resistance determinants can become epidemiologically important when they are associated with mobile genetic elements and are transferred to pathogenic bacteria.

Keywords: gut microbiota, gut resistome, antibiotic resistance genes, antimicrobial resistance, horizontal gene transfer, mobile genetic elements, metagenomics, epidemiology, public health.

Intrroduction:The **gut resistome** can be defined as the collective set of antibiotic resistance genes present within the intestinal microbial community. Unlike conventional antimicrobial-resistance surveillance, which primarily focuses on cultured clinical pathogens, resistome analysis considers resistance determinants carried by both pathogenic and non-pathogenic members of the microbiota.

Aim of the study.The aim of this study is to analyze the role of the human gut microbiota as a reservoir of antibiotic resistance genes, with particular emphasis on the abundance, diversity and mobility of ARGs and their potential contribution to horizontal gene transfer and the dissemination of antimicrobial resistance.

Materials and methods.This thesis is based on a **focused analysis of recent scientific literature and metagenomic studies** addressing the human gut resistome and the epidemiology of antimicrobial resistance.

Main findings. The reviewed evidence demonstrates that the human gut microbiota contains a substantial and diverse collection of antibiotic resistance determinants. Metagenome-wide analysis identified **1,093 unique antibiotic resistance genes among approximately 4.1 million gut microbial genes**, demonstrating that resistance determinants are detectable even when conventional culture-based approaches are not used.

nical treatment.

Scientific and practical significance. The scientific significance of this topic lies in shifting the understanding of antimicrobial resistance from a pathogen-centered model toward an **ecosystem and gene-centered model**. Instead of examining resistance only after a pathogen has caused infection, resistome analysis allows researchers to investigate resistance determinants before they necessarily appear in clinically important organisms.

Conclusion: The human gut microbiota represents a complex and potentially important reservoir of antibiotic resistance genes. Current metagenomic evidence

demonstrates that antibiotic exposure can reshape the gut resistome and that some resistance determinants are associated with mobile genetic elements capable of moving between bacterial hosts. The identification of broad-host-range mobile elements linking commensal bacteria and pathogens provides a mechanistic basis for considering the gut resistome as a potential source of future antimicrobial-resistance threats.

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ECONOMIC RIVALRY BETWEEN GREAT BRITAIN AND THE RUSSIAN EMPIRE IN THE MARKETS OF CENTRAL ASIA: THE CASE OF THE KOKAND KHANATE (19TH CENTURY)

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Abstract

This article analyses the economic rivalry waged by the British and Russian empires in the 19th century for control of the markets of Central Asia, and of the Kokand Khanate in particular, on the basis of the reports of Russian travellers and officials. Drawing on A.N. Teterevnikov's work "Ocherk vnutrenney trgovli Kirgizskoy stepi" (1867), the article examines the mechanism by which English goods penetrated the markets of Central Asia along the Peshawar-Kabul-Bukhara-Kokand route through intermediaries known as "parachi," as well as Russia's active seizure of the Kokand market following the rapid development of Russian industry after 1861. The study demonstrates that the rivalry between the two empires unfolded not only on the military-political plane but, above all, at the level of commodity prices, transport costs, and control over local intermediary networks, with geographical proximity and the short transport route running through Tashkent ultimately proving to be the decisive factor in Russia's gaining the upper hand.

Keywords: Great Britain, Russian Empire, Kokand Khanate, economic rivalry, parachi system, Peshawar-Kabul road, A.N. Teterevnikov, Tashkent, the Great Game.

The relevance of the subject lies in the fact that even in contemporary geopolitical analysis, rivalry between great powers is still frequently studied solely through the prism of military-diplomatic events, while its economic-commercial dimension is treated as secondary. Yet it is precisely the everyday rivalry at the level of trade routes, cost prices, and intermediary networks that can constitute the factor determining long-term strategic advantage - and this is vividly demonstrated by the example of 19th-century Central Asia.

In the 19th century, Central Asia became one of the centres of the geopolitical rivalry between the British and Russian empires - a process known in historiography as the "Great Game." While the military-political aspects of this rivalry have been widely covered in historiography, its economic-commercial dimension - in particular, the struggle waged by the two empires to directly capture local markets such as that of the Kokand Khanate - has been comparatively little studied. It is precisely this aspect that is reflected with considerable clarity and detail in the reports of Russian travellers and officials, in particular those of A.N. Teterevnikov, based on direct observation.

The purpose of this article is to establish, on the basis of the numerical data found in the reports of Teterevnikov and other contemporary authors, the routes by which English and Russian goods entered the market of the Kokand Khanate, their relative cost, and the role of the geographical factor and local intermediary networks in this rivalry. The study seeks to answer the following questions: (1) By what routes, and with the help of which intermediaries, did English goods enter the Kokand market? (2) What was the ratio between the cost of this route and the cost of delivering Russian goods? (3) How did the growth of Russian industry after 1861 alter the balance of the rivalry? (4) What role did Tashkent's geographical and commercial-intermediary position play in this rivalry?

Methodologically, the study relies on a critical analysis, as historical sources, of the reports of 19th-century Russian authors - above all A.N. Teterevnikov - based on trade statistics, on the systematisation of the figures they contain regarding prices and transport costs, and on a comparative examination of the commercial strategies of the two empires. Such an approach makes it possible, first, to consider the subject of the "Great Game" not only from a military-diplomatic standpoint but also at the level of everyday trading practice; and second, it points to the necessity of critically evaluating the views of contemporary observers, which were bound up with their own interests (for instance, Teterevnikov's conclusions, which were not impartial and favoured Russian goods).

In the 19th century, with the aim of capturing trade in the Central Asian khanates, the English employed an indirect method of distributing their goods in the Bukhara and Kokand khanates: through Indian Muslims residing near Peshawar in northern India - the so-called "parachi." English merchants extended their goods to the parachi on credit for a term of three years, and the parachi, in turn, sold these goods on credit (nasiya) in Bukhara and Kokand; some of them settled permanently in the local markets and sought to disseminate English goods more widely. This system, on the one hand, gave the English the opportunity to enter the market without direct political responsibility, while on the other hand it created an additional chain of intermediation that raised the cost price of the goods.

A.N. Teterevnikov noted that English goods entered by two main routes - the sea route and the overland Peshawar-Kabul-Bukhara route - and observed that the former was considerably more convenient, while the latter was extremely arduous. According to his calculations, transporting a single camel-load of goods from Peshawar to Kabul cost 1 tilla (8 rubles 20 kopecks), and from Kabul to Bukhara, 16 tilla (60 rubles 80 kopecks) - an expense that rose considerably on account of the duties levied by local rulers for passage through their territory. Each year, up to 10,000–15,000 camel-loads of goods were brought into Central Asia by this route, of which half went, via Khojand, to the cities belonging to the Kokand Khanate, while no more than 2,000 camel-loads reached Tashkent - thus, although Kokand received its own particular share, the length of the route and the duties levied made these goods considerably more expensive.

After 1861, the rapid development of Russian industry and the growing need for a raw-material base and external markets led to Russia's active seizure of the Kokand market. Iron, copper, steel, chintz, and other products arrived from Russia via Tashkent - that is, via a transport network considerably shorter and cheaper than the English route. Teterevnikov, by contrast, expressed concern that Russian goods sent from Tashkent to Kabul did not fully meet demand there, and that only certain products - for example, Turanian silk fabrics and Russian copper - were purchased well. Nevertheless, the general tendency was that geographical proximity and the comparatively short and safer route running through Tashkent gave Russia a strategic advantage, whereas English goods reached Kokand only via the Kabul route, and in relatively small quantities.

According to Teterevnikov's observations, in subsequent years fewer English goods were being brought to Tashkent, and it was evident that only previously accumulated stocks were being sold off. Bombay tea - one of the principal goods brought in via the Peshawar route - was rated lower in taste than Ghulja and Chuguchak tea, and its price was consequently three times lower; this was one of the factors that diminished the competitiveness of the English product in the eyes of the Kokand consumer. The author also notes that, owing to a conflict between the Emir of Bukhara and the Afghans, the transit of Russian copper and horses into Afghanistan was halted - which shows that political factors, too, exerted a direct influence on trade routes.

The above analysis shows that in the second half of the 19th century, the rivalry between England and Russia for the market of the Kokand Khanate unfolded not in a purely military-political form but as a complex commercial struggle bound up with transport costs, intermediary networks, and the local political situation. The geographical factor - Tashkent's proximity to Russia and its connection with the Siberian trade routes - proved decisive in the long run, while English goods, arriving expensively and slowly via the "parachi" system, were unable to maintain their advantage.

Another intermediary group that played an important role in the entry of English goods into Tashkent was the local Indian merchant community. Alongside English goods, they also brought local Indian products, and in many cases engaged in usury as well; A.N. Teterevnikov specifically notes that their principal occupation was precisely usury. This circumstance shows that the system by which English goods entered the Central Asian market consisted not of one but of at least two tiers of intermediation: the "parachi" on the Peshawar-Kabul route, and the Indian trade-credit networks in the local cities. Each additional tier further raised the final price of the goods, constituting an additional factor that diminished the competitiveness of English products relative to Russian ones. Given that the author did not observe the period following the Russian conquest of Tashkent in 1865, this analysis chiefly reflects the period preceding the conquest - that is, the phase in which the rivalry between the two empires was at its sharpest.

A third factor that significantly affected the commercial rivalry between the two empires was regional political instability. The fact that the transit of Russian copper and horses into Afghanistan was halted as a result of a conflict between the Emir of Bukhara and the Afghans, as well as the inconsistency of the duties levied by local rulers for passage across borders, shows that neither England nor Russia was able to exercise full control over the markets of Central Asia; rather, both sought to gain the upper hand chiefly by adapting to local political conditions. This aspect points to the need to reassess the "Great Game" not as a direct confrontation between two great powers, as it is often portrayed, but as a multi-layered and changeable process closely bound up with local factors.

In conclusion, in the 19th century the market of the Kokand Khanate became one of the commercial arenas of the "Great Game" between the British and Russian empires. A.N. Teterevnikov's calculations show that although English goods entered via the Peshawar-Kabul-Bukhara route with the help of "parachi" intermediaries, high transport costs and the great distance involved diminished their competitiveness. Russia, by contrast, made use of the shorter and safer route running through Tashkent, together with the industrial growth that followed 1861, and thereby achieved a dominant position in the Kokand market. Thus, geographical proximity and the efficiency of the transport-intermediary system emerge as the principal factors that determined the ultimate outcome of the economic rivalry between the two empires.

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IMPROVING ORGANIZATIONAL-ECONOMIC MECHANISMS FOR MICE TOURISM DEVELOPMENT IN UZBEKISTAN UNDER DIGITAL TRANSFORMATION

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Abstract: This article examines the organizational-economic mechanisms underlying the development of MICE tourism (Meetings, Incentives, Conferences, and Exhibitions) in the Republic of Uzbekistan in the context of accelerating digitalization of the national tourism sector. Despite the rapid growth of overall tourist arrivals, which exceeded ten million visitors in 2025, the MICE segment continues to face structural constraints, including fragmented coordination among convention bureaus, tour operators and venue providers, limited digital booking and analytics infrastructure, and an incomplete regulatory-fiscal framework for business-event organizers. Drawing on an analysis of recent state programs — including Presidential Decree No. UP-87 of May 2025, the planned launch of the Unified Tourism Platform in July 2026, and the value-added tax refund mechanism for MICE organizers introduced in 2026 — the study systematizes the organizational-economic instruments available to public authorities and private stakeholders.

Keywords: MICE tourism; organizational-economic mechanism; digitalization; Uzbekistan; convention and exhibition industry; tourism policy; digital platform; destination competitiveness.

Introduction: Business tourism, commonly referred to by the acronym MICE (Meetings, Incentives, Conferences, and Exhibitions), has become one of the most dynamic and economically valuable segments of the global tourism industry. Unlike leisure tourism, MICE tourism generates comparatively higher per-visitor expenditure, stimulates the development of urban infrastructure, and strengthens a country's international business and academic ties. For transition economies such as Uzbekistan, the development of MICE tourism is a strategically important direction, since it diversifies the tourism product beyond cultural and historical attractions and positions the country within global professional and scientific networks.

Over the past decade, Uzbekistan has pursued an active policy of opening its tourism sector, simplifying visa procedures, and integrating digital technologies into public administration. The number of international visitors surpassed ten million within eleven months of 2025, reflecting the cumulative effect of liberalization reforms. However, the organizational-economic mechanisms that specifically support MICE tourism — coordination between convention bureaus, venues, transport operators and tour companies; fiscal incentives for organizers; and digital infrastructure for planning and promoting business events — remain underdeveloped relative to the segment's growth potential. The purpose of this article is to analyze the current organizational-economic mechanisms of MICE tourism development in Uzbekistan and to propose directions for their improvement in light of the ongoing digital transformation of the national tourism management system.

1. Current State of MICE Tourism Governance in Uzbekistan

Uzbekistan's tourism sector has undergone substantial institutional restructuring since 2024, with tourism governance consolidated under a dedicated state committee responsible for strategy, licensing, and promotion. Presidential Decree No. UP-87 (May 2025) set targets for 2025–2026 that explicitly include the digitalization and diversification of tourism services as a distinct policy direction, alongside measures to increase regional tourist flows and support entrepreneurship in the sector. A subsequent government resolution introduced a value-added tax refund of fifty percent for business entities organizing international conferences and events that attract at least one hundred foreign participants, effective from April 2026 — a direct fiscal instrument aimed at stimulating MICE organizers.

At the international level, Uzbekistan's accession to the International Congress and Convention Association (ICCA) represents a significant step toward integrating the country into the global professional infrastructure that coordinates the international congress calendar. Membership provides access to bid-support resources, benchmarking data, and networking opportunities that are essential for attracting recurring international conferences rather than one-off events.

2. Digital Infrastructure and Its Implications for MICE Coordination

A central development is the planned launch, from July 2026, of a Unified Tourism Platform and accompanying mobile application, intended to consolidate booking, licensing and information services for the tourism sector, with artificial-intelligence and big-data analytics functions to be added by the end of 2026. For MICE tourism specifically, such a platform creates the potential for a single digital window connecting venue availability, accreditation of tour operators, transport logistics, and visitor registration — functions that are currently distributed across multiple agencies

and private operators without a unified data layer. The parallel growth of the national IT sector, reflected in a substantial increase in IT-park export services during the first quarter of 2026, further indicates that the technical capacity for such integration is expanding.

Nevertheless, the organizational-economic mechanism connecting these digital tools to the specific needs of MICE stakeholders — professional conference organizers, exhibition operators, and destination-marketing bodies — has not yet been formalized. Without an explicit MICE-oriented module within the Unified Tourism Platform, there is a risk that digitalization efforts will primarily benefit leisure tourism while leaving the business-events segment reliant on informal coordination.

3. Directions for Improving the Organizational-Economic Mechanism

Based on the analysis above, the article proposes a three-tier organizational-economic mechanism for MICE tourism development in Uzbekistan:

First, an institutional tier, in which a national convention bureau function is formally embedded within the state tourism committee, with clear responsibility for bid-support, venue accreditation, and coordination with international associations such as ICCA.

Second, a fiscal-incentive tier, which builds on the existing VAT refund mechanism by introducing graduated incentives tied to the scale and international composition of events, together with transparent eligibility criteria published through the Unified Tourism Platform.

Third, a digital-data tier, in which a dedicated MICE module of the Unified Tourism Platform aggregates venue capacity, real-time availability, and visitor-flow analytics, enabling both organizers and policymakers to measure the economic impact of business events with greater precision than is currently possible using aggregate tourism statistics alone.

Integrating these three tiers would allow Uzbekistan to move from a largely reactive, permit-based approach to MICE tourism toward a proactive, data-informed destination-management model consistent with practices observed in mature MICE markets.

Conclusion: The development of MICE tourism in Uzbekistan is occurring against the backdrop of an ambitious national digitalization agenda and a series of targeted fiscal and institutional reforms. However, the organizational-economic mechanisms that specifically support business-event organizers remain fragmented across agencies and lack a dedicated digital infrastructure layer. The three-tier mechanism proposed in this article — institutional consolidation, graduated fiscal incentives, and a dedicated MICE data module within the forthcoming Unified Tourism Platform — offers a practical pathway for strengthening Uzbekistan's competitiveness as a regional business-tourism

destination. Further empirical research, particularly quantitative assessment of the economic multiplier effects of MICE events after the platform's 2026 launch, is recommended as the digital infrastructure becomes operational.

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Towards a Competitive MICE Tourism Ecosystem in Uzbekistan:

Organizational and Economic Perspectives

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Abstract: Meetings, incentives, conferences and exhibitions (MICE) tourism has emerged as one of the most valuable and resilient segments of the global visitor economy, generating higher per-capita spending, filling off-peak seasonal gaps and strengthening a destination's international business profile. Uzbekistan, having liberalized its tourism policy since 2017 and set an ambitious target of twenty million annual international arrivals by 2030, has identified MICE tourism as a strategic diversification priority alongside ecological, gastronomic, medical and pilgrimage tourism. This article examines the organizational and economic foundations required for Uzbekistan to build a genuinely competitive MICE ecosystem. It reviews the conceptual underpinnings of MICE tourism, surveys international best practice, assesses the current institutional, infrastructural and market conditions in Uzbekistan, identifies the principal organizational bottlenecks, and evaluates the sector's economic multiplier potential. The article concludes with a set of strategic directions — institutional coordination, venue and human-capital investment, destination marketing, and public-private partnership mechanisms — that could accelerate Uzbekistan's transition from an emerging to an established MICE destination in the Central Asian region.

Keywords: MICE tourism, business tourism, Uzbekistan, destination competitiveness, tourism economics, convention industry, Central Asia.

Introduction: Tourism has become one of the fastest-growing sectors of the Uzbek economy over the past decade. Following the liberalization of visa and tourism policy that began in 2017, international arrivals rose from a modest base to more than 6.6 million visitors in 2023, and the pace of growth has accelerated further since: Uzbekistan received over 1.77 million international tourists in the first two months of 2026 alone, a year-on-year increase of roughly a third, and more than 6.5 million visitors in the first half of 2026, up almost twenty-five percent on the same period of

the previous year. This rapid expansion has prompted policymakers to look beyond the country's traditional Silk Road heritage offer — centred on Samarkand, Bukhara and Khiva — toward niche segments capable of sustaining growth throughout the calendar year and raising the average value of each visit. The government's tourism roadmap through 2030 explicitly names meetings, incentives, conferences and exhibitions (MICE) tourism, alongside ecological, gastronomic, medical, pilgrimage and sports tourism, as a priority diversification track, together with a doubling of four- and five-star hotel capacity and an expansion of accommodation stock to roughly ninety-five thousand rooms.

MICE tourism is attractive to national and municipal authorities for reasons that go beyond simple visitor counts. Business travelers and event delegates typically spend several times more per day than leisure tourists, book further in advance, are less sensitive to seasonality, and generate reputational and investment spillovers for the host economy that extend well beyond the tourism sector itself. For a country such as Uzbekistan, which is simultaneously trying to attract foreign direct investment, position itself as a regional logistics and trade hub, and diversify its export base, a credible MICE offer can function as a form of economic diplomacy as much as a tourism product.

The Concept and Economic Significance of MICE Tourism: The acronym MICE denotes four related but distinct activity types — corporate and association meetings, incentive travel programmers offered by companies to reward staff performance, conferences and congresses organized around a professional or scientific theme, and trade exhibitions or fairs. What unites these activities is that travel is undertaken primarily for a business, professional or organizational purpose rather than for leisure, even though delegates frequently extend their stay to explore the destination, a phenomenon the industry refers to as 'bleisure' travel. Economically, MICE tourism is prized for several structural characteristics. First, it commands higher average spending per visitor than conventional leisure tourism, because costs are frequently borne by employers or event organizers rather than individual travelers, and because delegates use premium accommodation, catering and ground-transport services. Second, MICE demand is comparatively resilient to seasonality: corporate calendars, academic conference cycles and trade-fair schedules are planned well in advance and are less weather-dependent than beach or heritage tourism, allowing host cities to smooth occupancy across the year. Third, large-scale events generate a wide multiplier effect across the local economy — hospitality, catering, transport, retail, interpretation and translation services, audiovisual production and event logistics all benefit — and this effect is amplified when a destination succeeds in becoming a repeat host for recurring

international events. Fourth, and perhaps most importantly for a transitional economy, MICE events function as a showcase: hosting an international congress or trade exhibition places local business, academic and administrative elites in direct contact with foreign counterparts, creating channels for trade, investment and knowledge transfer that outlast the event itself.

These characteristics explain why national and municipal tourism authorities worldwide, from Singapore and Dubai to smaller emerging destinations, have invested heavily in dedicated convention infrastructure and in specialized promotional bodies known as convention and visitor bureaus (CVBs), whose function is precisely to bid for and coordinate the delivery of international events.

Global Trends and International Best Practice: International experience points to a consistent set of preconditions for MICE competitiveness. Leading destinations combine purpose-built venue infrastructure — congress centers, exhibition halls and adjacent hotel clusters within walking distance of one another — with dedicated promotional agencies that operate independently of, but in close coordination with, general tourism marketing bodies. These convention bureaus typically perform three functions: destination bidding for international association events, coordination of local supplier networks (professional congress organizers, audiovisual firms, destination management companies), and data collection that allows the destination to track and report the direct economic impact of the events it hosts. A second recurring feature is specialization. Rather than attempting to compete across every segment of the meetings industry, successful emerging destinations tend to identify niche verticals in which they hold a genuine comparative advantage — historical or cultural distinctiveness, proximity to a particular trade corridor, a strong academic or scientific base in a specific discipline, or favorable visa and cost conditions relative to established hubs — and build a marketing and bidding strategy around that niche. A third feature is the sustained use of familiarization trips, global distribution partnerships and digital marketing to build destination awareness among meeting planners, who tend to be a small, professionally networked and risk-averse community.

Conclusion: Uzbekistan enters the competition for international MICE business with genuine advantages: rapid and sustained growth in overall international arrivals, an ambitious and well-resourced national tourism strategy, an expanding stock of upscale hotel capacity, a distinctive cultural and historical brand along the Silk Road, and a stated policy commitment to MICE as a diversification priority through 2030. These advantages, however, do not by themselves constitute a competitive MICE ecosystem. International experience consistently shows that destination competitiveness in this segment depends on institutional specialization, dedicated venue and human-capital

investment, and sustained, professionally targeted marketing to meeting planners — conditions that are only partially in place in Uzbekistan today.

The organizational and economic perspectives reviewed in this article suggest that the most productive next step is not simply further growth in leisure arrivals or additional hotel construction, but the deliberate construction of the institutional layer — a specialized convention and visitor bureau, a professional congress-organizing sector, and MICE-specific performance data — that would allow Uzbekistan to convert its existing tourism momentum into a genuinely competitive and self-sustaining business-events industry. Achieving this would not only support the government's broader target of raising tourism's contribution to GDP, but would also strengthen Uzbekistan's positioning as a hub for regional trade, investment and professional exchange across Central Asia.

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**IMPROVING ORGANIZATIONAL-ECONOMIC MECHANISMS FOR MICE
TOURISM DEVELOPMENT IN UZBEKISTAN UNDER DIGITAL
TRANSFORMATION**

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Abstract: This article examines the organizational-economic mechanisms underlying the development of MICE tourism (Meetings, Incentives, Conferences, and Exhibitions) in the Republic of Uzbekistan in the context of accelerating digitalization of the national tourism sector. Despite the rapid growth of overall tourist arrivals, which exceeded ten million visitors in 2025, the MICE segment continues to face structural constraints, including fragmented coordination among convention bureaus, tour operators and venue providers, limited digital booking and analytics infrastructure, and an incomplete regulatory-fiscal framework for business-event organizers. Drawing on an analysis of recent state programs — including Presidential Decree No. UP-87 of May 2025, the planned launch of the Unified Tourism Platform in July 2026, and the value-added tax refund mechanism for MICE organizers introduced in 2026 — the study systematizes the organizational-economic instruments available to public authorities and private stakeholders.

Keywords: *MICE tourism; organizational-economic mechanism; digitalization; Uzbekistan; convention and exhibition industry; tourism policy; digital platform; destination competitiveness.*

Introduction: Business tourism, commonly referred to by the acronym MICE (Meetings, Incentives, Conferences, and Exhibitions), has become one of the most dynamic and economically valuable segments of the global tourism industry. Unlike leisure tourism, MICE tourism generates comparatively higher per-visitor expenditure, stimulates the development of urban infrastructure, and strengthens a country's international business and academic ties. For transition economies such as Uzbekistan, the development of MICE tourism is a strategically important direction, since it diversifies the tourism product beyond cultural and historical attractions and positions the country within global professional and scientific networks.

Over the past decade, Uzbekistan has pursued an active policy of opening its tourism sector, simplifying visa procedures, and integrating digital technologies into public administration. The number of international visitors surpassed ten million within eleven months of 2025, reflecting the cumulative effect of liberalization reforms. However, the organizational-economic mechanisms that specifically support MICE tourism — coordination between convention bureaus, venues, transport operators and tour companies; fiscal incentives for organizers; and digital infrastructure for planning and promoting business events — remain underdeveloped relative to the segment's growth potential. The purpose of this article is to analyze the current organizational-economic mechanisms of MICE tourism development in Uzbekistan and to propose directions for their improvement in light of the ongoing digital transformation of the national tourism management system.

1. Current State of MICE Tourism Governance in Uzbekistan

Uzbekistan's tourism sector has undergone substantial institutional restructuring since 2024, with tourism governance consolidated under a dedicated state committee responsible for strategy, licensing, and promotion. Presidential Decree No. UP-87 (May 2025) set targets for 2025–2026 that explicitly include the digitalization and diversification of tourism services as a distinct policy direction, alongside measures to increase regional tourist flows and support entrepreneurship in the sector. A subsequent government resolution introduced a value-added tax refund of fifty percent for business entities organizing international conferences and events that attract at least one hundred foreign participants, effective from April 2026 — a direct fiscal instrument aimed at stimulating MICE organizers.

At the international level, Uzbekistan's accession to the International Congress and Convention Association (ICCA) represents a significant step toward integrating the country into the global professional infrastructure that coordinates the

international congress calendar. Membership provides access to bid-support resources, benchmarking data, and networking opportunities that are essential for attracting recurring international conferences rather than one-off events.

2. Digital Infrastructure and Its Implications for MICE Coordination

A central development is the planned launch, from July 2026, of a Unified Tourism Platform and accompanying mobile application, intended to consolidate booking, licensing and information services for the tourism sector, with artificial-intelligence and big-data analytics functions to be added by the end of 2026. For MICE tourism specifically, such a platform creates the potential for a single digital window connecting venue availability, accreditation of tour operators, transport logistics, and visitor registration — functions that are currently distributed across multiple agencies and private operators without a unified data layer. The parallel growth of the national IT sector, reflected in a substantial increase in IT-park export services during the first quarter of 2026, further indicates that the technical capacity for such integration is expanding.

Nevertheless, the organizational-economic mechanism connecting these digital tools to the specific needs of MICE stakeholders — professional conference organizers, exhibition operators, and destination-marketing bodies — has not yet been formalized. Without an explicit MICE-oriented module within the Unified Tourism Platform, there is a risk that digitalization efforts will primarily benefit leisure tourism while leaving the business-events segment reliant on informal coordination.

3. Directions for Improving the Organizational-Economic Mechanism

Based on the analysis above, the article proposes a three-tier organizational-economic mechanism for MICE tourism development in Uzbekistan:

First, an institutional tier, in which a national convention bureau function is formally embedded within the state tourism committee, with clear responsibility for bid-support, venue accreditation, and coordination with international associations such as ICCA.

Second, a fiscal-incentive tier, which builds on the existing VAT refund mechanism by introducing graduated incentives tied to the scale and international composition of events, together with transparent eligibility criteria published through the Unified Tourism Platform.

Third, a digital-data tier, in which a dedicated MICE module of the Unified Tourism Platform aggregates venue capacity, real-time availability, and visitor-flow analytics, enabling both organizers and policymakers to measure the economic impact of business events with greater precision than is currently possible using aggregate tourism statistics alone.

Integrating these three tiers would allow Uzbekistan to move from a largely reactive, permit-based approach to MICE tourism toward a proactive, data-informed destination-management model consistent with practices observed in mature MICE markets.

Conclusion: The development of MICE tourism in Uzbekistan is occurring against the backdrop of an ambitious national digitalization agenda and a series of targeted fiscal and institutional reforms. However, the organizational-economic mechanisms that specifically support business-event organizers remain fragmented across agencies and lack a dedicated digital infrastructure layer. The three-tier mechanism proposed in this article — institutional consolidation, graduated fiscal incentives, and a dedicated MICE data module within the forthcoming Unified Tourism Platform — offers a practical pathway for strengthening Uzbekistan's competitiveness as a regional business-tourism destination. Further empirical research, particularly quantitative assessment of the economic multiplier effects of MICE events after the platform's 2026 launch, is recommended as the digital infrastructure becomes operational.

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Towards a Competitive MICE Tourism Ecosystem in Uzbekistan: Organizational and Economic Perspectives

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Abstract: Meetings, incentives, conferences and exhibitions (MICE) tourism has emerged as one of the most valuable and resilient segments of the global visitor economy, generating higher per-capita spending, filling off-peak seasonal gaps and strengthening a destination's international business profile. Uzbekistan, having liberalized its tourism policy since 2017 and set an ambitious target of twenty million annual international arrivals by 2030, has identified MICE tourism as a strategic diversification priority alongside ecological, gastronomic, medical and pilgrimage tourism. This article examines the organizational and economic foundations required for Uzbekistan to build a genuinely competitive MICE ecosystem. It reviews the conceptual underpinnings of MICE tourism, surveys international best practice, assesses the current institutional, infrastructural and market conditions in Uzbekistan, identifies the principal organizational bottlenecks, and evaluates the sector's economic multiplier potential. The article concludes with a set of strategic directions — institutional coordination, venue and human-capital investment, destination marketing, and public-private partnership mechanisms — that could accelerate Uzbekistan's transition from an emerging to an established MICE destination in the Central Asian region.

Keywords: *MICE tourism, business tourism, Uzbekistan, destination competitiveness, tourism economics, convention industry, Central Asia.*

Introduction: Tourism has become one of the fastest-growing sectors of the Uzbek economy over the past decade. Following the liberalization of visa and tourism policy that began in 2017, international arrivals rose from a modest base to more than 6.6 million visitors in 2023, and the pace of growth has accelerated further since: Uzbekistan received over 1.77 million international tourists in the first two months of 2026 alone, a year-on-year increase of roughly a third, and more than 6.5 million visitors in the first half of 2026, up almost twenty-five percent on the same period of the previous year. This rapid expansion has prompted policymakers to look beyond the country's traditional Silk Road heritage offer — centred on Samarkand, Bukhara and Khiva— toward niche segments capable of sustaining growth throughout the calendar year and raising the average value of each visit. The government's tourism roadmap through 2030 explicitly names meetings, incentives, conferences and exhibitions (MICE) tourism, alongside ecological, gastronomic, medical, pilgrimage and sports tourism, as a priority diversification track, together with a doubling of four- and five-star hotel capacity and an expansion of accommodation stock to roughly ninety-five thousand rooms.

MICE tourism is attractive to national and municipal authorities for reasons that go beyond simple visitor counts. Business travelers and event delegates typically spend several times more per day than leisure tourists, book further in advance, are less sensitive to seasonality, and generate reputational and investment spillovers for the host economy that extend well beyond the tourism sector itself. For a country such as Uzbekistan, which is simultaneously trying to attract foreign direct investment, position itself as a regional logistics and trade hub, and diversify its export base, a credible MICE offer can function as a form of economic diplomacy as much as a tourism product.

The Concept and Economic Significance of MICE Tourism: The acronym MICE denotes four related but distinct activity types — corporate and association meetings, incentive travel programmes offered by companies to reward staff performance, conferences and congresses organized around a professional or scientific theme, and trade exhibitions or fairs. What unites these activities is that travel is undertaken primarily for a business, professional or organizational purpose rather than for leisure, even though delegates frequently extend their stay to explore the destination, a phenomenon the industry refers to as 'bleisure' travel. Economically, MICE tourism is prized for several structural characteristics. First, it commands higher average spending per visitor than conventional leisure tourism, because costs are frequently borne by employers or event organizers rather than individual travelers, and because delegates use premium accommodation, catering and ground-transport services. Second, MICE demand is comparatively resilient to seasonality: corporate calendars, academic conference cycles and trade-fair schedules are planned well in advance and are less weather-dependent than beach or heritage tourism, allowing host cities to smooth occupancy across the year. Third, large-scale events generate a wide multiplier effect across the local economy — hospitality, catering, transport, retail, interpretation and translation services, audiovisual production and event logistics all benefit — and this effect is amplified when a destination succeeds in becoming a repeat host for recurring international events. Fourth, and perhaps most importantly for a transitional economy, MICE events function as a showcase: hosting an international congress or trade exhibition places local business, academic and administrative elites in direct contact with foreign counterparts, creating channels for trade, investment and knowledge transfer that outlast the event itself.

These characteristics explain why national and municipal tourism authorities worldwide, from Singapore and Dubai to smaller emerging destinations, have

invested heavily in dedicated convention infrastructure and in specialized promotional bodies known as convention and visitor bureaus (CVBs), whose function is precisely to bid for and coordinate the delivery of international events.

Global Trends and International Best Practice: International experience points to a consistent set of preconditions for MICE competitiveness. Leading destinations combine purpose-built venue infrastructure — congress centers, exhibition halls and adjacent hotel clusters within walking distance of one another — with dedicated promotional agencies that operate independently of, but in close coordination with, general tourism marketing bodies. These convention bureaus typically perform three functions: destination bidding for international association events, coordination of local supplier networks (professional congress organizers, audiovisual firms, destination management companies), and data collection that allows the destination to track and report the direct economic impact of the events it hosts. A second recurring feature is specialization. Rather than attempting to compete across every segment of the meetings industry, successful emerging destinations tend to identify niche verticals in which they hold a genuine comparative advantage — historical or cultural distinctiveness, proximity to a particular trade corridor, a strong academic or scientific base in a specific discipline, or favorable visa and cost conditions relative to established hubs — and build a marketing and bidding strategy around that niche. A third feature is the sustained use of familiarization trips, global distribution partnerships and digital marketing to build destination awareness among meeting planners, who tend to be a small, professionally networked and risk-averse community.

Conclusion: Uzbekistan enters the competition for international MICE business with genuine advantages: rapid and sustained growth in overall international arrivals, an ambitious and well-resourced national tourism strategy, an expanding stock of upscale hotel capacity, a distinctive cultural and historical brand along the Silk Road, and a stated policy commitment to MICE as a diversification priority through 2030. These advantages, however, do not by themselves constitute a competitive MICE ecosystem. International experience consistently shows that destination competitiveness in this segment depends on institutional specialization, dedicated venue and human-capital investment, and sustained, professionally targeted marketing to meeting planners — conditions that are only partially in place in Uzbekistan today.

The organizational and economic perspectives reviewed in this article suggest that the most productive next step is not simply further growth in leisure arrivals or additional hotel construction, but the deliberate construction of the institutional layer — a specialized convention and visitor bureau, a professional congress-organizing sector, and MICE-specific performance data — that would allow Uzbekistan to convert its existing tourism momentum into a genuinely competitive and self-sustaining business-events industry. Achieving this would not only support the government's broader target of raising tourism's contribution to GDP, but would also strengthen Uzbekistan's positioning as a hub for regional trade, investment and professional exchange across Central Asia.

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Кариес у детей раннего возраста: этиология и патогенез

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Кариес зубов – одна из наиболее распространенных стоматологических проблем, вызывающих значительный интерес у ученых во всем мире. Его этиология включает сложное взаимодействие биологических, поведенческих, социально-экономических и экологических факторов. В последние годы исследователи предложили концептуальные модели для изучения факторов, способствующих развитию кариеса, таких как воздействие сахаров, образование кислот, изменения микробиоты полости рта и формирования биопленок. Научные открытия в области геномики и микробиологии позволили глубже понять механизмы развития кариеса и определить ключевые патогенные организмы, такие как *Streptococcus mutans* и *Lactobacillus* spp., а также их взаимодействие с другими микробами и питательными веществами. Настоящее исследование подчеркивает важность мультидисциплинарного подхода к пониманию патогенеза этого заболевания и разработке эффективных стратегий его профилактики.

Результаты исследования:

Ответ на вопрос «что вызывает кариес зубов?» интересовало исследователей всего мира. Эффективная Стратегия ведения против РДК должна быть основана на понимании его сложной этиологии и многоуровневого процесса. Были предложены концептуальные модели для анализа социально-экономических, поведенческих и биологических факторов, влияющих на состояние здоровья детей, включая кариес зубов [2]

После приема углеводов, особенно сахарозы, происходит быстрое падение pH в прилипающих к зубам биопленках до 5,0 или ниже. Более низкий pH приводит к так называемому дисбиотическому микробиому, который характеризуется увеличением доли кислых видов биопленки и изменений в составе матрикса биопленки. Таким образом, частое воздействие сахара

приводит к устойчивому производству кислоты и последующей деминерализации строения зуба [5].

Колонизация ротовой полости детей микроорганизмами происходит как путем вертикальной, так и горизонтальной передачи.

Передача микроорганизмов, однако, не должна считаться синонимом передачи кариеса, так как одних бактерий недостаточно для развития болезни.

По этой причине кариес зубов считается неинфекционным заболеванием. Биопленка сама по себе не производит болезни, но воздействие пищевых сахаров является определяющим фактором, а также способностью человека преодолевать экологические проблемы [16].

Кариес зубов развивается, когда зубной налет, полимикробная биопленка, не удаляется регулярно, а диета состоит в основном из моносахаридов [17,]. Моносахариды могут метаболизироваться многими бактериями полости рта, что приводит к повышенной выработке кислот, способных деминерализовать эмаль. Зубной налет строится поверх биопленки, начинающаяся непосредственно после механического удаления пленки. Более 700 видов/таксонов бактерий известны в полости рта [4]. Поскольку оральная среда обитания состоит из множества различных экологических ниш, этим может быть объяснено относительно высокое количество различных видов/таксонов. Микроорганизмы полости рта способны взаимодействовать друг с другом и в основном общаются с помощью так называемого «чувства кворума» (ЧК) [20].

В настоящее время хорошо известно, что не только бактерии, но также грибы, такие как *Candida albicans* и их взаимодействия, могут усиливать прогрессирование кариеса. Однако микроорганизмы, выращенные поливидами биопленки способны продуцировать экзополисахариды (EPS), а также известные как внеклеточные полимерные вещества. С помощью ЭПС микроорганизмы способны противостоять противомикробным препаратам, которые в последнее время используются в зубных пастах [3].

Следовательно, биопленкообразование не прерывается и вместе с абсорбированными сахарами из пищи приводит к кариесогенному зубному налету. Потребление свободных сахаров (т.е. сахаров, добавляемых в пищу и напитки и сахара, естественно присутствующие в меде, сиропах, фруктовых

соках и концентратах фруктовых соков) имеет решающее значение в развитие кариеса [19].

Некоторые когортные исследования показали, что две ключевые характеристики имеют решающее значение для развития РДК : возраст, с которого сахар употребляет ребенок и частоту его потребления. Что касается введение сахара, режим питания в раннем возрасте, характеристика большим количеством сильно подслащенных продуктов и напитков в первый год жизни тесно связаны с заболеваемостью детским кариесом в последующие годы [13].

Зубной налет находится на эмали детей состоит в основном из стрептококков и актиномицетов. При диете с низким содержанием сахара эти микроорганизмы живут как комменсалы в гомеостатической среде, контролируя друг друга. Как только потребление сахаров, особенно сладких продуктов и напитков увеличивается, то микробиота комменсального зубного налета будет поглощать их [17].

Экзополисахариды (EPS) являются основными строительными блоками биопленки, которые образуют ядро матрицы. ЭПС состоят в основном из растворимых и нерастворимых глюкоанов и в меньшей степени из фруктанов, но структура и состав варьируются в зависимости от интервала, прошедшего с момента последнего приема пищевых сахаров (Bowen & Koo, 2011). ЭПС в основном продуцируются бактериальными экзоферментами (например, глюкозилтрансферазами) на границе биопленка-зуб с использованием диетической сахарозы и крахмала, как рассматривалось ранее (Paes-Leme et al., 2006; Bowen & Koo, 2011) [2]. MS, особенно *S. mutans*, по-видимому, являются основными организмами, связанными с продукцией нерастворимого матрикса EPS, хотя другие стрептококки и *Lactobacillus reuteri* могут синтезировать экзополисахариды (согласно обзору Klein et al., 2013). Могут ли другие виды, обнаруженные в биопленке ECC, способствовать сборке нерастворимого матрикса EPS, еще предстоит тщательно изучить.

Заключение

Развитие кариеса зубов является результатом сложного взаимодействия множества факторов, включая микробные, диетические, экологические и поведенческие аспекты. Потребление сахаров играет ключевую роль в изменении микробиоты зубного налета, что приводит к образованию кислой среды и деминерализации эмали. Современные исследования, такие как

высокопроизводительная геномика и метаболомика, позволяют глубже изучить патофизиологию кариеса, выявляя ключевых возбудителей и механизмы их воздействия. Эти данные имеют важное значение для разработки профилактических мер, направленных на уменьшение заболеваемости кариесом у детей и взрослых. Комплексный подход, включающий обучение здоровым привычкам питания, поддержание гигиены полости рта и внедрение новых технологий, может способствовать снижению распространенности этого заболевания и улучшению качества жизни.

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ҲУДУДЛАРНИ ИЖТИМОИЙ-ИҚТИСОДИЙ РИВОЖЛАНТИРИШДА РЕСУРСЛАР САЛОҲИЯТИДАН ФОЙДАЛАНИШ МЕХАНИЗМЛАРИ

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АННОТАЦИЯ

Мазкур тезисда ҳудудларнинг ижтимоий-иқтисодий ривожланишида ресурслар салоҳиятидан фойдаланиш механизмлари илмий жиҳатдан ёритилган. Ресурс салоҳиятининг назарий-тушунчавий асослари, шу жумладан “ресурслар кўргилиги” ҳодисаси ва институционал омилларнинг аҳамияти кўриб чиқилган. Институционал-ҳуқуқий, молиявий-инвестиция, инфратузилма-кластер ва инсон капитали механизмлари таҳлил этилиб, улар Қашқадарё вилояти мисолида амалий жиҳатдан асосланган. Тадқиқот якунида ресурс салоҳиятидан фойдаланишни такомиллаштиришга доир таклифлар ишлаб чиқилган.

Калит сўзлар: ҳудудий ресурс салоҳияти, ижтимоий-иқтисодий ривожланиш, ресурслар кўргилиги, институционал механизм, кластер, Қашқадарё вилояти, инсон капитали.

АННОТАЦИЯ

В данных тезисах научно раскрыты механизмы использования ресурсного потенциала в социально-экономическом развитии регионов. Рассмотрены теоретико-понятийные основы ресурсного потенциала, включая феномен «ресурсного проклятия» и роль институциональных факторов. Проанализированы институционально-правовой, финансово-инвестиционный, инфраструктурно-кластерный механизмы и механизм развития человеческого капитала, обоснованные на примере Кашкадарьинской области. В заключение выработаны предложения по совершенствованию использования ресурсного потенциала.

Ключевые слова: региональный ресурсный потенциал, социально-экономическое развитие, ресурсное проклятие, институциональный механизм, кластер, Кашкадарьинская область, человеческий капитал.

ABSTRACT

This thesis examines the mechanisms for utilizing resource potential in the socio-economic development of regions. It addresses the theoretical and conceptual foundations of regional resource potential, including the “resource curse” phenomenon and the role of institutional factors. The institutional-legal, financial-investment, infrastructure-cluster, and human capital mechanisms are analyzed and substantiated using the example of the Kashkadarya region. The thesis concludes with proposals for improving the use of resource potential.

Keywords: *regional resource potential, socio-economic development, resource curse, institutional mechanism, cluster, Kashkadarya region, human capital.*

Худудларнинг барқарор ва инклюзив ижтимоий-иқтисодий ривожланишини таъминлаш ҳозирги босқичда Ўзбекистон иқтисодий сиёсатининг устувор йўналишларидан бирига айланган. "Ўзбекистон – 2030" стратегиясида белгиланган мақсадларга эришиш, энг аввало, ҳар бир ҳудуднинг ўзига хос табиий, инсоний ва ишлаб чиқариш ресурслари салоҳиятини тўлиқ рўёбга чиқаришни тақозо этади¹. Расмий маълумотларга кўра, республика ер ости бойликларининг умумий баҳоланган қиймати 3 триллион АҚШ долларидан ошиб, бу кўрсаткич ҳар бир фуқарога ўртача 78–79 минг доллар захирага тўғри келади, шу билан бирга мамлакат ҳудудининг атиги 20 фоизигина тўлиқ геологик жиҳатдан ўрганилган². Мазкур рақамлар, бир томондан, миллий табиий бойликнинг улканлигини кўрсатса, иккинчи томондан, ушбу салоҳиятдан амалда фойдаланиш даражаси потенциал имкониятларга ҳали тўлиқ мос эмаслигини тасдиқлайди. Айнан шу боис ресурс салоҳиятидан фойдаланишнинг ташкилий-иқтисодий механизмларини илмий асослаш, уларни ҳудудий ривожланиш стратегиялари билан узвий боғлиқ ҳолда такомиллаштириш масаласи ҳам назарий, ҳам амалий жиҳатдан долзарб ҳисобланади.

"Ҳудудий ресурс салоҳияти" тушунчаси иқтисодий адабиётларда кенг маънода муайян ҳудудда мавжуд бўлган табиий, меҳнат, ишлаб чиқариш, инфратузилма ва институционал ресурсларнинг йиғиндиси, шунингдек уларни ижтимоий-иқтисодий ривожланиш мақсадларида сафарбар этиш имконияти сифатида талқин қилинади. Ушбу таркибга қуйидаги асосий элементлар киради: табиий-ресурс салоҳияти (фойдали қазилмалар, ер, сув ва иқлим ресурслари); меҳнат ресурслари ва инсон капитали; ишлаб чиқариш-техник салоҳият (асосий фондлар, технологик даража); инфратузилма салоҳияти (транспорт, энергетика, коммуникация тармоқлари); институционал салоҳият (бошқарув сифати, ҳуқуқий муҳит, инвестиция иқлими).

Ресурсларга бой ҳудудларнинг ривожланиш тажрибасини ўрганиш шуни кўрсатадики, табиий ресурслар мавжудлигининг ўзи иқтисодий ўсишни

¹Ўзбекистон Республикаси Президентининг 2023 йил 11 сентябрдаги ПФ-158-сон "Ўзбекистон – 2030" стратегияси тўғрисида"ги Фармони // Қонунчилик маълумотлари миллий базаси. – 2023. – 12 сентябрь, 06/23/158/0126-сон.

²Ўзбекистон табиий бойликлари: ҳар бир фуқарога 79 минг долларлик ер ости хазинаси // Zamin.uz. – 2025. – 15 декабрь. – URL: <https://zamin.uz/uzbekiston/176207-ozbekiston-tabiiy-boyliklari-har-bir-fuqaroga-79-ming-dollarlik-er-osti-hazinas.html> (мурожаат санаси: 13.09.2026).

автоматик равишда таъминламайди. Ж.Сакс ва А.Уорнернинг классик тадқиқотларида исботланишича, табиий ресурсларга бой мамлакатлар кўпинча ресурсларга нисбатан камбағал мамлакатларга қараганда пастроқ иқтисодий ўсиш суръатларини намоён этади – бу ҳодиса иқтисодий адабиётларда "ресурслар кўргилиги" (resource curse) номи билан юритилади³. Ушбу парадоксни бартараф этишнинг калити, кўпчилик тадқиқотчилар фикрича, институционал омилларда, яъни мулкчилик ҳуқуқларининг ҳимояланганлиги, давлат бошқарувининг сифати ва ресурслардан олинган даромадларни шаффоф тақсимлаш механизмларида кўрилади⁴. Д.Норт таъкидлаганидек, иқтисодий тизимнинг узоқ муддатли натижадорлиги, авваламбор, расмий ва норасмий институтлар – мулкчилик ҳуқуқи, шартномаларни ижро этиш механизмлари ва давлат бошқаруви сифати билан белгиланади, бу эса ресурсга бой ҳудудлар учун ҳам тўлиқ амал қилади⁵. Бинобарин, ҳудуднинг ресурс салоҳияти нафақат унинг табиий бойлиги миқдори, балки шу бойликдан фойдаланишни ташкил этувчи институционал ва бошқарув механизмларининг сифати билан ҳам белгиланади. Ҳудуднинг ресурс салоҳиятидан самарали фойдаланиш бир-бири билан ўзаро боғлиқ бўлган бир нечта механизмлар орқали амалга оширилади.

Институционал-ҳуқуқий механизм ҳудудларни комплекс ижтимоий-иқтисодий ривожлантиришга қаратилган давлат дастурлари, президент фармон ва қарорлари, солиқ ҳамда божхона имтиёзлари тизимидан иборат бўлиб, у ресурслардан фойдаланишнинг ҳуқуқий чегараларини ва рағбатлантириш шартларини белгилайди.

Молиявий-инвестиция механизми давлат бюджети маблағлари, хорижий тўғридан-тўғри инвестициялар, давлат-хусусий шериклик (ДХШ) шакллари ва халқаро молия институтлари (Жаҳон банки, Осиё тараққиёт банки) кредит линиялари ҳисобидан ресурсга йўналтирилган лойиҳаларни молиялаштиришни таъминлайди.

Инфратузилма ва қайта ишлаш занжири (кластер) механизми хом ашёни жойида чуқур қайта ишлашга йўналтирилган ишлаб чиқариш кластерларини

³Sachs J.D., Warner A.M. Natural Resource Abundance and Economic Growth // NBER Working Paper Series. – Cambridge, MA: National Bureau of Economic Research, 1995. – No. 5398. – 47 p.

⁴Acemoglu D., Robinson J.A. Why Nations Fail: The Origins of Power, Prosperity, and Poverty. – New York: Crown Business, 2012. – 529 p.

⁵North D.C. Institutions, Institutional Change and Economic Performance. – Cambridge: Cambridge University Press, 1990. – 152 p.

шакллантириш, транспорт-логистика ва энергетика инфратузилмасини ривожлантиришни ўз ичига олади. М.Портернинг рақобатбардош кластерлар назариясига кўра, ҳудуднинг узоқ муддатли рақобатбардошлиги ҳам ашёни қайта ишламасдан экспорт қилишдан эмас, балки маҳаллий етказиб берувчилар, ишлаб чиқарувчилар ва хизмат кўрсатувчилар ўртасида шаклланадиган ўзаро боғлиқ занжирлар – кластерлар орқали таъминланади⁶. Шу маънода, минерал ёки қишлоқ хўжалиги ҳам ашёсини четга ҳам ҳолда чиқариш ўрнига, уни ҳудуднинг ўзида қайта ишлаш даражасини ошириш қўшимча қиймат яратиш ва иш ўринлари сонини кўпайтиришнинг асосий омилларидан бирига айланади.

Инсон капитали ва меҳнат бозори механизми касбий таълим ва малака ошириш тизимини ресурс тармоқлари эҳтиёжларига мослаштириш, аҳоли бандлигини ошириш ва меҳнат миграциясининг олдини олишга йўналтирилган чоратadbирларни ўз ичига олади.

Юқорида кўрсатилган механизмларнинг амалий намоён бўлишини Қашқадарё вилояти мисолида кузатиш мумкин. Вилоят табиий газ, нефть конденсати ва қурилиш материаллари бўйича республикада муҳим ўринлардан бирига эга бўлиб, минтақа иқтисодиётининг таркибий тузилишида ёқилғи-энергетика ва қазиб олиш саноати муҳим аҳамият касб этади.

Хусусан, 2026 йил сентябрь ойида вилоятнинг Миришкор туманидаги "Патрон" конденсат-газ конида саноат миқёсида қазиб олиш йўлга қўйилди: биргина разведка қудуғи суткасига тахминан 500 минг куб метр табиий газ бериб турибди, конининг умумий захираси эса тахминан 2,5 миллиард куб метр деб баҳоланмоқда⁷. Бундай кичик ва ўрта миқёсдаги конларни жалб этиш республикада сўнгги йилларда газ қазиб олиш ҳажми пасайиб бораётган шароитида минтақавий ёқилғи-энергетика мувозанатини сақлашнинг муҳим воситаларидан бирига айланмоқда.

Расмий статистика маълумотларига кўра, 2026 йил бошига Қашқадарё вилоятининг доимий аҳолиси 3,7 миллион кишидан ошган, вилоятда 30,4 мингдан зиёд корхона ва ташкилот фаолият юритмоқда. Сўнгги ҳисобот даврида вилоятнинг ялпи ҳудудий маҳсулоти ҳажми 6,8 фоизга, шу жумладан саноат ишлаб чиқариши 7,2 фоизга, қурилиш 10,8 фоизга, бозор хизматлари эса 13,6

⁶Porter M.E. The Competitive Advantage of Nations. – New York: Free Press, 1990. – 855 p.

⁷Қашқадарёда янги "Патрон" газконденсат конида газ қазиб олиш бошланди // Gazeta.uz. – 2026. – 7 сентябрь. – URL: <https://www.gazeta.uz/oz/2026/09/07/patron/>.

фоизга ўсган⁸. Бундан аввалги даврда ҳам ижобий динамика кузатилган: 2023 йилнинг биринчи ярмида вилоят ялпи ҳудудий маҳсулоти 25,9 триллион сўмни ташкил этиб, ўтган йилнинг мос даврига нисбатан 4,3 фоизга ортган, шу жумладан саноат 6,6 фоизга, қурилиш эса 5,3 фоизга кенгайган⁹.

Институционал-ҳуқуқий механизмнинг амалий кўриниши сифатида 2023 йил 3 февралда қабул қилинган Президент қарорини кўрсатиш мумкин: унга кўра 2023 йил учун вилоят ялпи ҳудудий маҳсулоти 59 триллион сўмдан, саноат ишлаб чиқариши 24 триллион сўмдан, қишлоқ хўжалиги 31,5 триллион сўмдан ортиқ бўлиши, 440 мингдан зиёд киши ёлланма меҳнатга жалб этилиши ва ҳудуд экспорти 325,9 миллион АҚШ доллариға етказилиши белгиланган эди¹⁰. Мазкур ҳужжатда шунингдек хом ашё ва қайта ишлаш занжирини ривожлантиришга йўналтирилган аниқ лойиҳалар ҳам назарда тутилган: жумладан, қурилиш материаллари ишлаб чиқариш учун 46 та кон объектини аукцион савдолариға қўйиш, дон маҳсулотларини қайта ишлашга йўналтирилган 25 та лойиҳани (жумладан, тегирмон, нон-булка ва ёрма корхоналари) амалга ошириш, 30 минг гектар майдонда анор боғлари барпо этиш ва Косон туманида газлама бўяш корхонасини йўлга қўйиш кўзда тутилган. Шунингдек, Китоб ва Шаҳрисабз туманларида туристик-рекреацион зоналар ташкил этиш, 8 та қишлоқ аҳоли пунктида туризм инфратузилмасини ривожлантириш назарда тутилган бўлиб, бу ҳудуд ресурс салоҳиятини нафақат казиб чиқарувчи саноат, балки табиий-рекреацион ва маданий-тарихий салоҳият орқали ҳам рўёбга чиқариш имкониятини кўрсатади.

Шуни таъкидлаш лозимки, ҳудудий даражадаги бундай чора-тадбирлар мамлакат миқёсидаги барқарор макроиқтисодий муҳит фонида амалга оширилмоқда: Жаҳон банки баҳосига кўра, Ўзбекистон ялпи ички маҳсулотининг 2025 йилдаги ўсиш суръати 6,2 фоизга етказилиши прогноз

⁸Ўзбекистон Республикаси Давлат статистика қўмитаси. Ҳудудлар статистикаси: Қашқадарё вилоятининг ижтимоий-иқтисодий ҳолати рақамларда // stat.uz. – 2026. – 20 феврал. – URL: <https://stat.uz/uz/matbuot-markazi/qo-mita-yangiliklar/66972>.

⁹Ўзбекистон Республикаси Давлат статистика қўмитаси. Қашқадарё вилоятининг ялпи ҳудудий маҳсулоти қанчага ўсди? // stat.uz. – 2023. – URL: <https://stat.uz/uz/matbuot-markazi/qo-mita-yangiliklar/44471>.

¹⁰Ўзбекистон Республикаси Президентининг 2023 йил 3 февралдаги ПҚ-44-сон "2023-2025 йилларда Қашқадарё вилоятини комплекс ижтимоий-иқтисодий ривожлантириш ва аҳоли турмуш даражасини янада яхшилашга доир қўшимча чора-тадбирлар тўғрисида"ги Қарори // lex.uz. – URL: <https://lex.uz/docs/6377444>

қилинган, бу эса ҳудудий инвестиция лойиҳаларини молиялаштириш учун қулай макроиқтисодий шароит яратади¹¹.

Ўтказилган таҳлил бир қатор тизимли муаммоларни аниқлашга имкон беради. Биринчидан, кўплаб ҳудудларда, шу жумладан Қашқадарёда ҳам, хом ашёни чуқур қайта ишлаш даражаси ҳали пастлигича қолмоқда – бу эса қўшимча қийматнинг катта қисмининг ҳудуддан ташқарида яратилишига олиб келади. Иккинчидан, ресурсга бой ҳудудларда инвестициялар кўпроқ қазиб олиш соҳасига йўналтирилиб, инфратузилма ва инсон капиталига қилинадиган сармоялар нисбатан кам эътибор олмақда. Учинчидан, ресурслардан олинадиган даромадларни ҳудуд аҳолиси фаровонлигини оширишга йўналтиришнинг шаффоф ва институционал жиҳатдан мустаҳкам механизмлари ҳали тўлиқ шаклланмаган. Ниҳоят, табиий газ каби қайта тикланмайдиган ресурслар заҳирасининг пасайиб бориши мамлакат миқёсида қайд этилаётган тенденция бўлиб, бу ҳудуд иқтисодиётини диверсификация қилиш заруратини янада долзарблаштиради.

Юқоридагиларни инобатга олган ҳолда, ресурс салоҳиятидан фойдаланиш механизмларини такомиллаштиришнинг қуйидаги йўналишлари мақсадга мувофиқ ҳисобланади: хом ашёни қайта ишлаш занжирини чуқурлаштиришга йўналтирилган кластерларни давлат-хусусий шериклик асосида шакллантириш; ресурс рентасидан олинадиган даромадларнинг бир қисмини мақсадли равишда ҳудудий инфратузилма ва инсон капитали ривожланишига йўналтирувчи шаффоф молиявий механизмларни жорий этиш; геологик изланиш ишларини кенгайтириш орқали ҳудудлардаги очилмаган ресурс заҳираларини аниқлаш; ҳудудий ижтимоий-иқтисодий ривожланиш дастурларини мониторинг қилишнинг натижавий кўрсаткичларга асосланган тизимини яратиш.

Ўтказилган тадқиқот шуни кўрсатадики, ҳудудларнинг ижтимоий-иқтисодий ривожланишида ресурслар салоҳиятидан фойдаланиш кўп қиррали жараён бўлиб, у институционал-ҳуқуқий, молиявий-инвестиция, инфратузилма-кластер ва инсон капитали механизмларининг ўзаро уйғун ҳаракатини тақозо этади. Табиий ресурсларнинг мавжудлиги ўз-ўзидан ижтимоий-иқтисодий тараққиётни таъминламайди – бунинг учун институтларнинг сифати, бошқарув шаффофлиги ва хом ашёни чуқур қайта ишлашга йўналтирилган узоқ муддатли стратегик ёндашув зарур. Қашқадарё вилояти мисолида кўриб чиқилган амалий тажриба

¹¹World Bank raises forecast for Uzbekistan's GDP growth in 2025 to 6.2% // Gazeta.uz. – 2025. – 9 October. – URL: <https://www.gazeta.uz/en/2025/10/09/wb/>

худудий даражадаги мақсадли давлат дастурлари ресурс салоҳиятини ривожланиш омилига айлантиришнинг муҳим воситаси эканини тасдиқлайди, бироқ бу борада қайта ишлаш даражасини ошириш, инвестицияларни диверсификация қилиш ва ресурс даромадларини тақсимлашнинг институционал механизмларини янада такомиллаштириш давр талаби бўлиб қолмоқда.

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**THE ROLE OF CULTURAL AND SPIRITUAL-EDUCATIONAL INSTITUTIONS IN EDUCATING YOUTH IN THE
SPIRIT OF NATIONAL VALUES: THE CASE OF SURKHANDARYA REGION, 1991–2026**

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ABSTRACT

This thesis examines the role of cultural and spiritual-educational institutions in educating young people in Surkhandarya Region in the spirit of national values between 1991 and 2026. During the period of independence, museums, theatres, information and library institutions, cultural centers, spiritual-educational structures, historical heritage sites, and public cultural events became important social institutions for strengthening historical memory, national identity, patriotism, and respect for cultural heritage. In 2024, the two operating museums in Surkhandarya received 52.3 thousand visitors, while school pupils and students accounted for 14.7% of all visitors. In the same year, the region's two theatres staged 509 performances and attracted 173 thousand spectators. The 2025–2026 repertoire, including historically and morally oriented productions such as "Imom Termiziy", "Shiroq", and "Tumaris", demonstrates the practical capacity of cultural institutions to communicate national history and ethical ideals through artistic forms. The thesis argues that the educational impact of these institutions can be strengthened through digital communication, interactive museum pedagogy, youth clubs, community-based programs, and systematic cooperation with schools and universities.

Keywords: youth, national values, spiritual education, cultural institutions, museum, theatre, library, Surkhandarya, historical memory, cultural heritage.

ANNOTATSIYA

Ushbu tezisdagi 1991–2026-yillarda Surxondaryo viloyatida yoshlarni milliy qadriyatlar ruhida tarbiyalashda madaniy-ma'naviy muassasalarning o'рни tahlil qilinadi. Mustaqillikdan keyingi davrda muzeylar, teatrlar, axborot-kutubxona muassasalari, madaniyat markazlari, ma'naviyat va ma'rifat tizimi, tarixiy-madaniy meros obyektlari hamda ommaviy madaniy tadbirlar yosh avlodda tarixiy xotira, milliy o'zlik, vatanparvarlik va madaniy merosga hurmatni shakllantiruvchi muhim ijtimoiy institutlar sifatida faoliyat yuritdi. 2024-yilda Surxondaryo viloyatidagi 2 ta muzeyga 52,3 ming kishi tashrif buyurgan bo'lib, tashrifchilarning 14,7 foizini maktab o'quvchilari hamda oliy va o'rta maxsus ta'lim muassasalari talabalari tashkil etgan. Shu yili viloyatdagi 2 ta teatrdagi 509 ta spektakl namoyish etilib, 173 ming tomoshabin qamrab olingan. 2025–2026-yillardagi "Imom Termiziy", "Shiroq" va "Tumaris" kabi tarixiy-ma'rifiy sahna asarlari madaniy muassasalarning milliy tarix va qadriyatlarni yoshlar ongiga badiiy vositalar orqali yetkazishdagi amaliy imkoniyatlarini ko'rsatadi. Tezisdagi an'anaviy madaniy-ma'rifiy faoliyatni raqamli kommunikatsiya, yoshlar klublari, interaktiv muzey pedagogikasi va ta'lim muassasalari bilan hamkorlik asosida rivojlantirish zarurligi asoslanadi.

Kalit soʻzlar: yoshlar, milliy qadriyatlar, maʼnaviy tarbiya, madaniyat muassasalari, muzey, teatr, kutubxona, Surxondaryo, tarixiy xotira, madaniy meros.

АННОТАЦИЯ

В тезисе анализируется роль культурных и духовно-просветительских учреждений в воспитании молодежи Сурхандарьинской области в духе национальных ценностей в 1991–2026 гг. В период независимости музеи, театры, информационно-библиотечные учреждения, культурные центры, система духовно-просветительской работы, объекты историко-культурного наследия и массовые культурные мероприятия стали важными социальными институтами формирования исторической памяти, национальной идентичности, патриотизма и уважения к культурному наследию. В 2024 г. два музея области приняли 52,3 тыс. посетителей, 14,7% которых составляли учащиеся школ и студенты. В двух театрах области было показано 509 спектаклей, которые посетили 173 тыс. зрителей. Репертуар 2025–2026 гг., включающий постановки «Имам Термизи», «Ширак» и «Томирис», показывает возможности театра как средства передачи молодежи национальной истории и нравственных ориентиров. Обосновывается необходимость сочетания традиционной культурно-просветительской деятельности с цифровыми коммуникациями, музейной педагогикой, молодежными клубами и системным сотрудничеством с образовательными учреждениями.

Ключевые слова: молодежь, национальные ценности, духовное воспитание, учреждения культуры, музей, театр, библиотека, Сурхандарьинская область, историческая память, культурное наследие.

INTRODUCTION

The education of young people in the spirit of national values is one of the central elements of cultural continuity. National values include historical memory, language, customs and traditions, respect for ancestors, family and community ethics, artistic heritage, religious and secular intellectual traditions, and responsibility toward the homeland. These values do not become part of the worldview of a younger generation automatically; they are transmitted through family, education, community life, media, and specialized cultural and spiritual-educational institutions.

For Surkhandarya Region, this issue has particular significance because the region combines a rich archaeological and historical heritage with living traditions of folklore, handicrafts, music, theatre, local customs, and pilgrimage culture. Termiz and the wider Surkhan oasis are associated with ancient civilizations, Buddhist archaeological sites, Islamic scholarship, traditional crafts, and a distinctive regional cultural environment. This concentration of tangible and intangible heritage gives local cultural institutions considerable educational potential.

After Uzbekistan gained independence in 1991, the interpretation of national history, the restoration of cultural memory, and the strengthening of interest in historical personalities and heritage became increasingly important areas of public cultural life. In this context, museums and theatres began to function not only as places for preservation and entertainment, but also as institutions that interpret the past for younger generations. Libraries and cultural centers likewise became spaces for reading, dialogue, exhibitions, literary meetings, commemorative events, and community-based educational work.

By the 2020s, the educational environment had changed substantially. Young people increasingly received information through digital media, short-form video, social networks, and online platforms. As a result,

cultural and spiritual-educational institutions faced a dual task: to preserve authenticity and historical accuracy while presenting national heritage through forms that are attractive and understandable to a digitally oriented generation.

The purpose of this thesis is to identify the main stages and forms of activity of cultural and spiritual-educational institutions in Surkhandarya during 1991–2026, to assess their contribution to the formation of national values among young people, and to outline practical directions for increasing their educational effectiveness.

MAIN PART

1. Transformation of cultural and spiritual-educational work after independence

The first stage, covering the 1990s and early 2000s, was characterized by the revaluation of national history and cultural heritage in the context of independence. Cultural institutions increasingly emphasized local historical figures, traditions, national holidays, folk art, and the preservation of monuments. In Surkhandarya, the educational value of this process was especially visible because the region's identity is closely connected with Termez, the Surkhan oasis, archaeological heritage, and major religious scholars such as Imam al-Tirmidhi.

The second stage, roughly covering the 2000s and 2010s, was associated with institutional modernization and a wider use of cultural events as a means of youth education. Museums, theatres, libraries, cultural centers, schools, mahallas, and educational institutions increasingly organized joint events, contests, exhibitions, literary evenings, excursions, and commemorative programs. Such formats allowed national values to be communicated not only as abstract concepts, but through objects, stories, performances, music, and direct participation.

The third stage, particularly visible from the late 2010s to 2026, is characterized by efforts to connect cultural heritage with new communication technologies, tourism, youth initiatives, and modern public education. The national program adopted for educating young people in loyalty to national values and patriotism envisages a staged system of national education and emphasizes deeper study of the spiritual heritage of ancestors, responsibility, tolerance, civic awareness, and respect for national values among students and young adults.

2. Museums as institutions of historical memory

Museums have a special role in transmitting national values because they work with authentic material evidence. Archaeological finds, manuscripts, ethnographic objects, works of art, traditional household objects, and historical documents allow young visitors to see national history as a material reality rather than only as textbook information. In this sense, museum pedagogy links knowledge, emotion, visual memory, and personal experience.

Official regional statistics show that in 2024 Surkhandarya had two operating museums, which received 52.3 thousand visitors. School pupils and students of higher and secondary specialized educational institutions accounted for 14.7% of total visitors. This figure is significant because it demonstrates that museum activity already reaches a measurable youth audience; at the same time, it also indicates room for stronger cooperation with schools, colleges, and universities.

Museum excursions can be particularly effective when they are connected with educational assignments, local-history projects, debates, digital storytelling, and student research. For Surkhandarya, the Museum of Archaeology in Termiz and art and cultural collections provide opportunities to connect ancient regional history, national identity, and modern civic responsibility. In 2026, museum visits organized in the region were explicitly presented as a means of increasing interest in historical and cultural heritage and educating the younger generation in respect for national values and patriotism.

3. Theatre and artistic representation of national ideals

Theatre influences value formation through emotional identification. A historical personality, moral conflict, or national story becomes meaningful when the audience observes characters making decisions and experiencing the consequences of those decisions. Therefore, theatre can transform historical and ethical content into personal reflection.

In 2024, two theatres operated in Surkhandarya Region. They staged 509 performances and attracted 173 thousand spectators. These figures indicate that theatre remains one of the region's most visible cultural institutions. The educational dimension is especially evident in productions based on historical memory and moral themes.

The Surkhandarya Musical Drama Theatre's 2025 repertoire included the production "Imom Termiziy", and the theatre opened its 90th season with this work. The regional puppet theatre presented "Shiroq" during the Independence Day open-house program, while the 2026 schedule of the musical drama theatre included the historical drama "Tumaris" as well as repeated performances of "Imom Termiziy". These examples show that stage art can connect young audiences with national history through emotionally engaging narratives rather than only through formal instruction.

4. Libraries, cultural centers, and public educational spaces

Libraries and information-resource institutions contribute to national education through reading culture, access to historical and literary sources, book exhibitions, meetings with writers and scholars, and local-history collections. Their educational importance is particularly high because reading develops reflective engagement with values. Unlike short digital content, books and archival materials create conditions for sustained attention and critical understanding.

Cultural centers and local cultural institutions have another advantage: they connect national values with living practice. Folk songs, traditional instruments, dance, crafts, national clothing, oral history, festivals, and family customs can be transmitted through clubs, master classes, exhibitions, and public events. The 2025 "Khan Atlas" initiatives in Surkhandarya emphasized that national clothing embodies historical traditions and cultural identity and explicitly linked such cultural promotion with educating the younger generation in the spirit of national values.

At the district level, similar initiatives continued in 2026. In Sariosiyo District, National Clothing Day activities were presented as a way of connecting young people with cultural memory and national identity. Such events are most educationally valuable when they move beyond ceremonial participation and include explanation of symbols, production techniques, regional differences, and the historical meanings of cultural forms.

5. Educational mechanisms and current challenges

The educational influence of cultural institutions operates through several mechanisms. First, they provide historical knowledge and credible sources. Second, they create emotional identification with historical figures and cultural symbols. Third, they provide social participation through clubs, performances, exhibitions, volunteering, and festivals. Fourth, they offer intergenerational communication by bringing young people together with artists, historians, craftsmen, veterans, researchers, and elders.

Nevertheless, the period up to 2026 also reveals several challenges. Formalism can reduce a cultural event to attendance rather than learning. Young people may visit a museum or theatre without subsequent discussion or interpretation. Some institutions may have limited digital content, weak social-media communication, or insufficient interactive programs. Rural youth can face unequal access to major cultural institutions concentrated in Termiz. In addition, cultural education must compete with a large flow of global entertainment content that is often faster, more visual, and algorithmically personalized.

These challenges require a transition from event-based cultural work to continuous educational ecosystems. Museums should develop youth guides, interactive quests, QR-based multilingual explanations, mobile exhibitions, and student research programs. Theatres can organize post-performance discussions and educational packages for schools. Libraries can create local-history clubs, oral-history archives, reading challenges, and digital collections. Cultural centers can integrate traditional crafts with entrepreneurship, design, tourism, and creative industries so that national heritage is perceived not as a static past but as a living resource for contemporary development.

The most effective model for Surkhandarya is institutional cooperation. A museum excursion should be connected with a school lesson; a theatrical production should be followed by discussion; a library exhibition can support a university research assignment; a cultural-center master class can involve local artisans and youth organizations. Such cooperation turns national-value education from isolated propaganda into sustained cultural experience.

CONCLUSION

Between 1991 and 2026, cultural and spiritual-educational institutions in Surkhandarya evolved from primarily preservational and ceremonial organizations into increasingly active platforms for historical interpretation, cultural participation, and youth education. Museums, theatres, libraries, cultural centers, heritage sites, and spiritual-educational programs collectively contributed to the transmission of historical memory, national identity, patriotism, ethical norms, and respect for cultural heritage.

The regional statistics for 2024 demonstrate that these institutions have a substantial audience: museums attracted 52.3 thousand visitors and theatres 173 thousand spectators. Historically oriented productions such as “Imom Termiziy”, “Shiroq”, and “Tumaris” show that artistic institutions can translate national history into emotionally meaningful experiences for young people.

At the same time, the effectiveness of national-value education depends not on the number of events alone, but on the depth of youth participation. The priority for the next stage should be to strengthen museum pedagogy, digital communication, youth clubs, mobile cultural programs, educational partnerships, and systematic evaluation of learning outcomes. In this way, Surkhandarya’s cultural heritage can function not only as a preserved legacy, but as an active resource for forming historically aware, culturally confident, and socially responsible young citizens.

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**MARKAZLASHGAN MODEL VA MINTAQAVIY REALLIK
DIALEKTIKASI: SOVET SOG‘LIQNI SAQLASH TARIXINI MINTAQAVIY
O‘RGANISHNING NAZARIY-METODOLOGIK RAMKASI
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Annotatsiya. Maqolada sovet sog‘liqni saqlash tarixini mintaqaviy darajada o‘rganish uchun «markazlashgan model va mintaqaviy reallik dialektikasi» nazariy ramkasi va uning uch darajali tahliliy modeli (markaziy qaror, mahalliy bajarish, tafovut) taklif etiladi. Ramka Surxondaryo viloyat davlat arxivi hujjatlari – 1920-yillar okrug materiallari va 1950-yillar oxiridagi doklad – misolida sinovdan o‘tkaziladi, markaz va mintaq o‘rtasidagi tafovutning besh turi ajratiladi. Ramka totalitar va revizionist talqinlarning bir tomonlamaligidan qochish va normativ, faktik hamda diskursiv manbalarni triangulyatsiya qilish imkonini berishi asoslanadi.

Kalit so‘zlar: markaz va mintaq, dialektika, uch darajali model, triangulyatsiya, sovet tarixi, sog‘liqni saqlash, Surxondaryo, metodologiya.

Аннотация. В статье для изучения истории советского здравоохранения на региональном уровне предлагается теоретическая рамка «диалектика централизованной модели и региональной реальности» и её трёхуровневая аналитическая модель (центральное решение, местное исполнение, расхождение). Рамка апробируется на документах Сурхандарьинского областного государственного архива – материалах округа 1920-х годов и докладе конца 1950-х годов; выделяются пять типов расхождения между центром и регионом. Обосновывается, что рамка позволяет избежать односторонности тоталитарной и ревизионистской трактовок и применять триангуляцию нормативных, фактических и дискурсивных источников.

Ключевые слова: центр и регион, диалектика, трёхуровневая модель, триангуляция, советская история, здравоохранение, Сурхандарья, методология.

Abstract. For studying the history of Soviet healthcare at the regional level, the article proposes the theoretical frame of the «dialectic of the centralized model and regional reality» and its three-level analytical model (central decision, local implementation,

divergence). The frame is tested on documents of the Surkhandarya Regional State Archive – okrug materials of the 1920s and a report of the late 1950s – and five types of divergence between centre and region are identified. It argues that the frame helps to avoid the one-sidedness of totalitarian and revisionist interpretations and allows triangulation of normative, factual and discursive sources.

Keywords: centre and region, dialectic, three-level model, triangulation, Soviet history, healthcare, Surkhandarya, methodology.

Muammo va maqsad. Sovet tarixini o'rganishda ikki an'anaviy qarash mavjud. Totalitar model sovet tizimini butunlay markazdan boshqariladigan, mahalliy darajada mustaqillik yoki o'ziga xoslik bo'lmagan tizim deb ko'rsatadi; revizionist model esa mahalliy darajaning rolini ortiqcha ta'kidlaydi. Ikkalasi ham mintaqaviy tarix uchun yetarli emas: birinchisi mahalliy ijroning farqini yashiradi, ikkinchisi markazning hal qiluvchi rolini kamsitadi. Maqolaning maqsadi – markaz va mintaqa munosabatini dialektik nuqtai nazardan tahlil qilish ramkasini bayon etish va uni arxiv hujjatlarida sinash.

Nazariy ramka. Markaz – qaror qabul qiluvchi, resurs taqsimlovchi va siyosat belgilovchi hokimiyat; chekka – bu siyosatni amalga oshiruvchi hududiy birlik. Chekka markaziy siyosatni passiv qabul qilmaydi: uni o'z sharoitida o'zgartiradi, moslashtiradi yoki unga qarshilik ko'rsatadi. Dialektik yondashuvda markaziy model (tezis) va mahalliy reallik (antitezis) o'zaro ta'sirga kirishadi va o'ziga xos mintaqaviy manzara (sintez) hosil bo'ladi. Bu qarash markazning hal qiluvchi rolini tan oladi, ammo mahalliy darajaning ham passiv emasligini ko'rsatadi va tarixiy jarayonni statik emas, ziddiyatli va dinamik tushunishga imkon beradi.

Usul: uch darajali model va triangulyatsiya. Ramkani aniq tahlilga aylantirish uchun har bir hodisa uch daraja bo'yicha ko'riladi: birinchisi – markaziy qaror yoki reja (rasmiy hujjatlar va direktivalar); ikkinchisi – mahalliy bajarish (hisobotlar, statistika, arxiv hujjatlari); uchinchi – tafovut va uning sababi. Uchinchi daraja eng muhimi, chunki mintaqaviy o'ziga xoslik aynan shu yerda namoyon bo'ladi. Ishonchlilik uchun uch turdagi manba o'zaro qiyoslanadi: normativ (nima rejalashtirilgan), faktik (amalda nima bo'lgan) va diskursiv (voqealar qanday taqdim etilgan). Sovet sharoitida rasmiy manbalar ko'pincha siyosiy bosim ostida bezab ko'rsatilgani uchun bunday qiyoslash ayniqsa zarur. Empirik material – Surxondaryo viloyat davlat arxivining 74-fondi (okrug sog'liqni saqlash bo'limi, 1920-yillar) va 77-fondi (viloyat sog'liqni saqlash bo'limi, 1950-yillar).

Modelni sinash: traxomaga qarshi xizmat. Uch darajali modelni bitta hujjat misolida ko‘rish mumkin. Birinchi daraja – reja: 1958-yilning birinchi choragi uchun viloyat bo‘limi aholini yalpi tekshiruvdan o‘tkazish, aniqlangan bemorlarni Termiz va Denov dispanserlariga yotqizish hamda o‘rta tibbiyot xodimlarini maxsus o‘qitishni belgilagan [1]. Ikkinchi daraja – rejani bajarishi lozim bo‘lgan tarmoq: 1957–1958-yillarda viloyatda 14 ta traxoma punkti faoliyat yuritgan [1]. Uchinchi daraja – tafovut: o‘sha hujjatda Jarqo‘rg‘on tumanida mablag‘ yetishmagani sababli faqat bitta punkt ochilgani qayd etilgan [1]. Bu tafovutning sababi mahalliy beparvolik emas, resurs taqsimotining o‘zi edi, ya’ni tafovut markazlashgan modelning ichki mantig‘idan kelib chiqqan.

Shakl mazmundan oldinda. Ikkinchi misol kadrlar o‘lchovida. 1955-yil dekabrda viloyat traxoma dispanseri mustaqil muassasa maqomini olgan; ammo 1957-yilda butun viloyatda atigi 3 nafar okulist ishlagan, yetti tumanda bu mutaxassis bo‘lmagan va 1954–1957-yillarda viloyatga birorta okulist kelmagan [2]. Bu yonma-yon dalillar dialektikaning mohiyatini ko‘rsatadi: markaz mintaqada muassasaviy shaklni yarata olgan, ammo uni kadr mazmuni bilan to‘ldirishga qodir bo‘lmagan. Muassasaviy shakl kadr mazmunidan oldinda borishi markazlashgan modelning chekka mintaqalarda eng barqaror takrorlanadigan ko‘rinishi edi.

Ildizlar: 1920-yillar okrug hujjatlari. Bu qonuniyat viloyat tashkil topishidan ancha oldin, okrug davridayoq ko‘rinadi. 1927/28-yilda respublika davolash fondi dotatsiyasi (jami 225 000 so‘m) beshta okrug o‘rtasida taqsimlanganda, Surxondaryo okrugi ro‘yxatda umuman ko‘rsatilmagan [3]. Xuddi shu yili Sog‘liqni saqlash xalq komissarligi Surxondaryo veneriya dispanseriga yozgan xatida uzaytirilgan ta’tillar faqat epidemik holat e’lon qilingan joylarda berilishini, okrug bo‘yicha esa bunday holat rasman mavjud emasligini bildirgan [4]. Uchinchi misol – protezlash: okrug nogiron dehqonlar va o‘quvchilarni protez bilan ta’minlash uchun 4 040 so‘mlik smeta taklif qilgan, Respublika Moliya xalq komissarligi uni byudjetdan chiqarib tashlagach, okrug bu xarajatni o‘zining operatsion kreditlari hisobidan qoplashga majbur bo‘lgan [5]. Dotatsiyadan chetlatish, epidemik holatni tan olmaslik va majburiyatni mintaqqa zimmasiga yuklash – uch epizod markazlashgan model chekkada qanday ishlaganini 1920-yillardayoq ko‘rsatadi.

Tafovutning turlari. 1957-yil dokladi va unga ilova ma’lumotnoma tafovutning bir necha turini bitta hujjatda qayd etgani bilan qimmatli. Birinchi tur – markazning o‘z majburiyatini bajarmasligi: vazirlik 1957-yil uchun 52 shifokor ajratgan, kelgani 32 nafar; 1955-yilda 31 o‘rniga 20, 1956-yilda 36 o‘rniga 21 nafar kelgan [6]. Markaz

mintaqa uchun raqam belgilashga qodir edi, ammo uni odam bilan to'ldirishga qodir emas edi. Ikkinchi tur – mahalliy bajaruvchi bo'g'inning ishlamasligi: Uzun tumanida kolxoz sil sanatoriysi qurilishi uchun bir million rubldan ortiq mablag' ajratilgan va smeta-loyiha hujjatlari o'z vaqtida taqdim etilgan, ammo kolxozlar qurilishga kirishmagan, tuman rahbarlari nazorat qilmagan [7]. Uchinchi tur – normativ hujjatning uzoq yillar bajarilmasligi: SSSR Vazirlar Sovetining 1951-yildagi va O'zbekiston SSR Vazirlar Sovetining 1955-yildagi sanitariya obodonlashtirishga oid qarorlari amalga oshmagani qayd etilgan [8]. To'rtinchi tur – sohalararo bog'liqlik: kasal bolani kasalxonaga olib borish uchun transport kolxoz ixtiyorida bo'lgan va kolxoz raisi uni bermagan, bola shifoxonaga kech yotqizilib, bir soatdan keyin vafot etgan [9]; tibbiy tizim o'zi ishlagan, uzilish uning tashqarisida yuz bergan. Beshinchi tur – qarorning o'z maqsadiga qarshi ishlashi: Termiz shahar kasalxonasi viloyat kasalxonasiga aylantirilgan, ammo koyka va kadr soni o'zgarmagan holda uning ish hajmi oshgan, natijada shahar aholisiga xizmat biroz yomonlashgan [10].

Bu besh tur muhim nazariy xulosaga olib keladi: markaz va mintaqa o'rtasidagi tafovut yagona sabab bilan izohlanmaydi. U goh markazning bajarmasligidan, goh mahalliy bo'g'inning sustligidan, goh nazorat mexanizmining yo'qligidan, goh sohalararo bo'ysunishdan, goh qarorning ichki nomutanosibligidan kelib chiqadi. Shu sababli «markaz aybdor» yoki «mahalliy ijro yomon» kabi bir tomonlama izohlar yetarli emas; har bir holatda tafovutning aniq mexanizmi alohida aniqlanishi kerak.

Triangulyatsiyaning roli. Uch darajali modelning ishlashi manbalarni qiyoslashga bog'liq. Ko'p hollarda normativ, faktik va diskursiv manbalar bir-biriga mos keladi va bu ma'lumotni tasdiqlaydi; ba'zan esa ular orasida tafovut paydo bo'ladi, va aynan shu eng qimmatli tahliliy nuqta. Masalan, reja yuqori ko'rsatkichni belgilaydi, hisobot uni bajarilgan deb ko'rsatadi, matbuot esa haqiqiy holatni boshqacha ochib beradi. Shu tariqa, triangulyatsiya markaziy reja (normativ), mahalliy bajarish (faktik) va ularning idroki (diskursiv) o'rtasidagi munosabatni ochib beradigan metodologik vositadir.

Ramkaning izohlovchi kuchi va ahamiyati. Ramka sovet tizimining ham yutuqlarini, ham muvaffaqiyatsizliklarini bir xil nazariy ramkada tushuntiradi. Bezgakni tugatishda markaziy safarbarlik aniq, chegaralangan vazifani hal etishda samarali bo'ldi; paxta monokulturasida esa markaziy iqtisodiy reja mahalliy ekologik reallikka zid keldi va salbiy oqibatlariga olib keldi. Bu bitta tizimning ikki yuzidir: dialektik yondashuv sovet tarixini faqat yutuqlar yoki faqat muvaffaqiyatsizliklar orqali baholashning bir tomonlamaligidan saqlaydi. Ramkaning yana bir ahamiyati shundaki, u Surxondaryo bilan cheklanmaydi: har bir mintaqaning o'z omillari bo'lsa-da, markaz

va chekka orasidagi dialektik munosabat umumiy hodisadir, shu sababli bu model boshqa sovet mintaqalarini o'rganishda ham sinovdan o'tkazilishi mumkin. Oliy ta'limda ijtimoiy-gumanitar fanlarni o'qitishda uch darajali model talabaga tarixiy hodisani «reja – ijro – tafovut» tuzilmasi bo'yicha tahlil qilishni o'rgatuvchi oddiy va izchil vosita bo'la oladi.

Xulosa. Markazlashgan model va mintaqaviy reallik dialektikasi sovet sog'liqni saqlash tarixini mintaqaviy o'rganishda totalitar va revizionist talqinlarning bir tomonlamaligini bartaraf etadigan nazariy-metodologik ramka sifatida asoslandi. Uch darajali model va manbalar triangulyatsiyasi Surxondaryo arxiv hujjatlarida ishlashi ko'rsatildi: shakl mazmundan oldinda borgani, tafovutning besh turi va uning ildizlari 1920-yillar okrug hujjatlariga borib taqalishi aniqlandi. Ramkaning kuchi tafovutni bitta sababga keltirmasdan, uning har bir holatdagi aniq mexanizmini ochib berishidadir.

Foydalanilgan manbalar va adabiyotlar

1. Surxondaryo viloyat davlat arxivi (SVDA), 77-fond, 1-ro'yxat, 206-yig'majild, 3-varaq.
2. SVDA, 77-fond, 1-ro'yxat, 206-yig'majild, 1-varaq.
3. SVDA, 74-fond, 1-ro'yxat, 7-yig'majild, 27-varaq.
4. SVDA, 74-fond, 1-ro'yxat, 7-yig'majild, 49-varaq.
5. SVDA, 74-fond, 1-ro'yxat, 11-yig'majild, 46 va 56-varaqlar.
6. SVDA, 77-fond, 1-ro'yxat, 210-yig'majild, 13 va 47-varaqlar.
7. SVDA, 77-fond, 1-ro'yxat, 210-yig'majild, 8-varaq.
8. SVDA, 77-fond, 1-ro'yxat, 210-yig'majild, 17-varaq.
9. SVDA, 77-fond, 1-ro'yxat, 210-yig'majild, 25-varaq.
10. SVDA, 77-fond, 1-ro'yxat, 210-yig'majild, 32-varaq.

ВЛИЯНИЕ ИНФЛЯЦИИ НА ЭКОНОМИЧЕСКИЙ РОСТ: ЭКОНОМЕТРИЧЕСКИЙ АНАЛИЗ

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Аннотация. В работе рассматривается взаимосвязь между уровнем инфляции и экономическим ростом с использованием методов эконометрического анализа. Основная цель исследования заключается в определении характера и силы влияния изменения уровня цен на динамику валового внутреннего продукта. Для анализа может быть использована регрессионная модель, позволяющая количественно оценить зависимость между рассматриваемыми показателями.

Ключевые слова: эконометрика, инфляция, экономический рост, ВВП, регрессионный анализ, эконометрическая модель.

Актуальность исследования. Инфляция является одним из важнейших макроэкономических показателей, оказывающих влияние на деятельность предприятий, потребительское поведение и инвестиционные решения. Изучение взаимосвязи между инфляцией и экономическим ростом позволяет оценить возможные последствия изменения уровня цен для экономики страны. Эконометрические методы дают возможность не только выявить наличие такой зависимости, но и измерить её количественно.

Методология исследования. Для оценки взаимосвязи между инфляцией и экономическим ростом может применяться модель множественной линейной регрессии:

$$\text{GDP} = \beta_0 + \beta_1 \text{INF} + \beta_2 \text{INV} + \beta_3 \text{UNEMP} + \varepsilon,$$

где GDP — темп роста реального ВВП; INF — уровень инфляции; INV — уровень инвестиций; UNEMP — уровень безработицы; β_0 — константа; $\beta_1, \beta_2, \beta_3$ — параметры модели; ε — случайная ошибка.

Коэффициент β_1 позволяет определить направление и величину связи между инфляцией и экономическим ростом при прочих равных условиях. Для проверки качества модели могут использоваться коэффициент детерминации R^2 , t-критерий Стьюдента и F-критерий Фишера. Также необходимо проверить модель на наличие гетероскедастичности, автокорреляции и мультиколлинеарности.

Ожидаемые результаты. Эконометрический анализ позволит определить, существует ли статистически значимая связь между инфляцией и экономическим ростом, а также оценить её направление. При этом важно учитывать, что характер взаимосвязи может зависеть от уровня инфляции, периода исследования и других макроэкономических факторов.

Заключение. Использование эконометрических методов позволяет получить количественную оценку взаимосвязи между инфляцией и экономическим ростом. Построение регрессионной модели и проведение статистических тестов помогают сделать исследование более обоснованным и выявить факторы, оказывающие существенное влияние на экономическую динамику.

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